

Running Head: Assessing School Climate

Middle School Improvement and Reform: Development and Validation of a School-Level

Assessment of Climate, Cultural Pluralism and School Safety

Abstract

The structure of perceived school climate, and the relationship of climate dimensions to adaptation, were examined in a large-scale multi-year investigation of students who attend middle grade level schools. Analyses of the structure, reliability, inter-rater convergence, and stability of school climate ratings were conducted in a large-scale sample of over 105,000 students in 188 schools. The climate scales exhibited a stable dimensional structure, high levels of internal consistency, and moderate levels of stability over one- and two-year time intervals. The relationship between climate ratings and students' adjustment was examined in three increasingly large samples of schools and students that were collected during successive years of this project. Ratings of multiple climate dimensions were associated consistently with indices of academic, behavioral, and socio-emotional adjustment.

Assessing School Climate in Middle School Improvement
and Reform: The Development and Validation of a School-Level Assessment
of Climate, Cultural Pluralism, and School Safety

The social environment of educational settings may have a profound and pervasive impact on the academic and social adaptation of students (Felner & Felner, 1989). One aspect of the school environment associated with a range of adaptational outcomes is the students' experience of social climate (Trickett & Moos, 1973). Students' reports of school climate have been found to be associated with objective features of the classroom environment including the teachers' instructional style, classroom organization and curriculum (Trickett, 1978), and observer ratings of social interaction (Moos, 1979). Students' perceptions of a school's climate are also strongly associated with both their academic adaptation and achievement and their socio-emotional and behavioral adjustment (Brand & Felner, 1996; Felner, Aber, Cauce & Primavera, 1985; Fraser & Fisher, 1982; Nelson, 1984). Hence, students' reports of the social climate in educational settings both reflect critical regularities of these settings and can help us to understand the ways in which these developmental settings serve as "contexts of socialization" (Trickett, 1978) that shape learning, achievement, and adjustment.

To date, most structured multi-dimensional assessments of school climate have focused on the perceived environment of schooling at the classroom level (e.g., Moos, 1979). A few notable exceptions have attempted to consider assessments of climate at the whole school level (Epstein, 1981; Felner, Ginter, & Primavera, 1982; Green, Adams & Turner, 1988; Roeser & Eccles, 1998; Walberg & Genova, 1983). Although classroom level measures may be appropriate for the assessment of climate at the elementary level, this is not the case for most

middle, junior high and high school structures. Students in the middle and secondary grades move from class to class throughout the day and are confronted with a changing set of peers, shorter periods of contact with a larger number of teachers, and fluctuations in rules and instructional routines across classes and teachers (Felner, Farber, & Primavera, 1980; Felner, Gintner, & Cauce, 1981). These middle and secondary school regularities require assessment strategies that capture students' experiences across the school day.

As the nation has moved forward in its efforts to create comprehensive school reform designs (Felner, Favazza, Shim, Brand, Gu, & Noonan, 2001; Glennan, 1998; Ross, 2000; Stringfield, Ross, & Smith, 1996), the goal of whole school change has moved to the forefront. In these designs, the impact of school change on school experiences and academic outcomes of *all* students is the primary foci, making school-level assessments of climate necessary for developing the understanding of school restructuring that is sought. Efforts to improve middle and secondary level education have sought to restructure the organization and regularities of the school as a whole, as well as practices in particular classrooms (Felner, & Adan, 1988; Felner, Brand, Adan, Mulhall, Sartain, & DuBois, 1993; Glennan, 1998; Task Force on the Education of Young Adolescents, 1989; Stringfield, Ross, & Smith, 1996). Evaluations of these school change efforts seek to describe and understand the implementation and impact of the specific improvement designs on all of the students in the school settings (Datnow & Stringfield, 2000; Ross, 2000). These efforts require strategies for understanding the ways that the implementation of multi-element instructional, structural, and procedural changes impact, and are impacted by, the students' experiences of and adaptation to the climate of the school (Felner et. al., 2001).

The current work describes an effort to develop a reliable and useful measure of whole

school climate for middle and secondary settings. It draws from lessons provided by prior research on the structure of classroom climate. Illustratively, an enduring issue in the measurement of educational climate concerns the nature of the underlying dimensional structure of students' experiences of the social environment. To address this issue, Moos (1979) and his colleagues proposed three overarching dimensions of social climate (i.e., Relationship, Personal Growth, and System Maintenance and Change dimensions); these broader dimensions are comprised of more directly observable and measurable sub-dimensions. Trickett and Moos (1973) developed the Classroom Environment Scale (CES) in an effort to apply this framework to the educational experiences and outcomes of students. Studies of the dimensional structure of this instrument have yielded inconsistent results. Trickett and Quinlan (1979) found that students' ratings of classroom climate reflect an underlying structure of six factors, rather than the nine sub-dimensions proposed for the original CES. Other studies have found additional differences in both the nature and structure of the CES sub-dimensions and overarching factors (Manderscheid, Koenig, & Silbergeld, 1977; Nelson, 1984; Schultz, 1979; Walker & Richman, 1984). These studies illustrate the need for refinement of our understanding of the key dimensions of the social climate of educational settings.

Prior research on school climate using the CES and other instruments can, however, provide a starting point for identifying dimensions to consider for inclusion in an assessment of whole school climate. Students' academic performance and/or school adjustment have been found to be associated with educational climate experiences including greater commitment to academic achievement by peers or teachers (e.g., Eccles & Midgley, 1989; Phillips, 1997; Shouse, 1996), as well as teacher support, student involvement in class activities, peer affiliation,

rule clarity, classroom and school organization, instructional innovation, and student participation in decision-making (Brand & Felner, 1996; Epstein & McPartland, 1979; Epstein, 1981; Felner et. al., 1985; Humphrey, 1984; Moos, 1979; Weisz & Cowen, 1974; Wright & Cowen, 1982).

The dimensions of social climate noted above have typically been examined in studies that focus on social climate per se. There are at least two additional dimensions of school climate that have typically been considered within their own separate lines of research. These dimensions, however, appear to be important to comprehensively assess the social climate of educational settings:

- (1) The setting's support for, and sensitivity to, cultural pluralism and diversity; and
- (2) The students' experiences of the school as an environment that is safe and not fear-laden (Felner & Felner, 1989; Gottfredson & Gottfredson, 1985).

Epstein (1985) found that Black students attained higher levels of achievement when the school environment was characterized both by positive teacher attitudes toward integration and by classroom practices that emphasized cooperation and equal status contacts among students from all backgrounds. Green, Adams and Turner (1988) found that students reported more positive levels of academic efficacy and quality of school life in schools that were more supportive of cultural pluralism and diversity. Adan and Felner (1995) found minority students had greater academic success in educational settings that were more ecologically congruent with their prior experiences, particularly in their values and friendship patterns. Students' sense of safety in school may impact their academic, behavioral, socio-emotional, and physical well-being (National Research Council, 1993) as well as students' more general experience of the school as

a supportive and welcoming place (Gottfredson & Gottfredson, 1985).

Methodological Concerns in the Development of School-Level Assessments

There are significant obstacles that confront efforts to develop a reliable and stable measure of *school level social climate*. These include potential limitations on the ability of investigators to: (1) collect data from large and diverse sample of schools, and (2) to obtain extensive samples of students within buildings. Although studies of classroom climate have often included large samples of classrooms and/or students within classrooms (e.g., Moos, 1979; Trickett & Quinlan, 1979), it must be understood that one school may yield multiple observations at the classroom level. Thus, the actual number of *schools* involved may be relatively few and/or geographically clustered within only a few districts, with limited variability in climate, students, or their life contexts (e.g., urban/rural). When large numbers of schools have been included in a sample, as in many of the large scale assessments from the National Center on Educational Statistics, resource and logistical constraints have lead to a tendency to sample relatively small subsets of students within each school to represent each building (Lee & Bryk, 1989; Phillips, 1997). Conversely, other investigators have studied climate employing “dense” samples of students (i.e., numerous students within a school) but have included a relatively small and restrictive sampling of schools (e.g., Tolsma, Menne & Hopper, 1976).

These methodological limitations raise concerns regarding both the degree to which social climate scales derived from these samples will provide for reliable assessments of climate across schools, and the degree to which the measurement of climate in any given school is consistent across student sub-populations. To move forward in understanding comprehensive school improvement initiatives, measures of school climate are required that are based on large

and diverse samples of schools and students such that they are reliable and representative for all students and student sub-populations within each school.

Finally, for studies of school improvement, there is an additional issue of key import. That is, relatively little is known about the *stability* of school climate over time. To the extent that measures of school climate reflect enduring features of the social environment of the school, we would expect that climate ratings would remain relatively stable from year to year even as the student membership of the building “turns over” (due to graduation and school entry as well as within-year student mobility). Indeed, a key assumption of evaluations of educational reform is that despite the turnover in the inhabitants of a school building, the building, and its processes and climate, can be characterized in ways that are relatively stable except when meaningful school improvement and change efforts have occurred.

Method

The current work presents the results of a series of studies that both sought to develop a reliable and stable measure of students’ experiences of whole school climate for middle and junior/high secondary students, and to examine the significance of the school climate dimensions so identified for students’ academic, behavioral, and socio-emotional adaptation. Study 1 describes a series of steps and analyses that were conducted for the initial development of the measure. Study 2 further examined the nature and structure of the school climate dimensions identified in larger samples of schools and students. In this second study our focus was: (a) replication/confirmation and stability of the dimensions at the school level in larger samples; (b) the consistency of climate perceptions and dimensions across different demographic sub-populations of students attending the same schools; and (c) the stability of school level climate

scores over time.

Study 3 provides validation data on the utility of the measures for understanding the effects of school level climate on students. Specifically, we examined the relationships between the school climate dimensions as assessed by the measure and multiple indicators of student adjustment. Consistent with our concern for understanding the characteristics and utility of the measures for all students, these analyses focused on the differential patterns of relationships with regard to race/ethnicity. Finally, to address some of the issues raised earlier with regard to stability and the replicability and robustness of associations between climate and students' adjustment, Study 3 draws upon and examines data that were collected during three successive years in a large, longitudinal, sample of schools.

Cross Study Procedures Concerning Samples and Data Collection

Participants in all samples were students and teachers in middle level and early secondary school grades taking part in a larger investigation of the nature and impact of educational environments and change efforts on student achievement, performance, and adjustment (Felner, Favazza, Shim, Brand, Gu, & Noonan, 2001; Felner, Shim, Brand, Favazza, & Seitsinger, 2000). Student achievement and demographic data were collected from student record systems at the district central office level and/or from the State Departments of Education. Participation required voluntary and informed consent, with consent for students required both from students and their parents. All staff and students completed surveys in the early part of the Spring Semester during the school day. Teachers completed behavioral and performance checklists on a representative, random sub-sample of students. Procedures allowed for matching of student surveys to teacher checklists and, in representative sub-samples of students, to achievement data.

Data collection procedures provided for identifying information to be removed other than the randomly assigned tracking numbers that allowed for the matching of data elements within and across years. To ensure that students' reading ability would not interfere with their ability to answer any survey item, the instructions and individual items were read aloud by the teacher as students followed along and completed the surveys at their desks. As will be seen below, these procedures resulted in high percentages of both usable student survey responses and response rates. Teachers were provided with time to complete surveys at their desks and returned them in sealed envelopes. Parents and administrators also filled out survey instruments as part of the overall study. The survey data obtained from teachers, parents and administrators is beyond the scope of this paper as our focus is on student responses, teacher ratings of students, and achievement. Still, the full set of data collection procedures are worth noting here as they provide the reader a more complete context for the study.

The current paper draws on a relatively unique data set in terms of its size and scope. Over the past two decades the Project on High Performance Learning Communities (Felner, et. al., 1997; 2000; 2001) has collected data from more than two thousand schools serving students in grades pre-k to 12 across more than 25 states. Schools have participated in data collection as part of self-study and school improvement efforts that have been supported by district, state, or foundation sources. Because of the active commitment of schools to the use of the data, response rates have been high and representative of the underlying populations across samples. Student response rates have averaged approximately 90% overall, with over 94% of those students in attendance on the day of survey administration participating and providing usable survey data. Staff participation levels, particularly among classroom teachers of core academic subjects, have

typically averaged between 80-90% or more per school across years. Because of our focus in this work on middle/junior high schools, the present study included samples of students in grades 6 through 8 who attended schools that included the seventh grade. Across the three studies presented below, schools and students were typically involved with multiple years of data collection as described in the specific study.

Study 1

Development of the Inventory of School Climate- Student Version (ISC-Student)

The focus of Study 1 was pilot work and exploratory analyses for the identification of the factor structure of a psychometrically sound, multi-dimensional instrument to assess students' perceptions of whole school climate. The initial version of the measure - the "Inventory of School Climate-Student" (ISC-S), consisted of a pool of 112 items that were designed to assess dimensions of school climate that have been found to be consistently related to students' adjustment (i.e., Teacher Support, Consistency and Clarity of Rules and Expectations, Student Commitment and Achievement Orientation, Negative Peer Interactions, Positive Peer Interactions, Disciplinary Harshness, Student Input in Decision-Making, Instructional Innovation/Relevance, Support for Cultural Pluralism, and Safety Problems). To develop these items, we examined existing measures of educational climate (Felner, Aber, Cauce, & Primavera, 1985; Walberg & Anderson, 1968), support for cultural pluralism (Green, Adams, & Turner, 1988), and safety problems (National Institute of Education, 1978), as well as literature on the impact of middle/junior high school learning environments on the adaptation of young adolescents (Felner & Adan, 1988; Felner et. al., 2001).

The ISC-S underwent several phases of pilot work. An initial pre-test was conducted to

determine whether the ISC-S items and rating scales were written in ways and at levels that were easily comprehensible to students in the middle grade and secondary grade levels, even those with some reading difficulties. Analysis of pilot data from three middle schools and over one thousand (1,000) students suggested that students had difficulty responding in a reliable manner to items that allowed for responses that were essentially double negative choices and statements (e.g., answering no to "Grades are not important in this school"), excessive qualification (e.g., "Sometimes things are pretty disorganized here"), and those that contained colloquial expressions (e.g., "social hour", "sidetracked"). Follow-up testing indicated that these difficulties were successfully addressed when these problematic elements were revised. Our pilot analyses also revealed that middle and early secondary-grade students could respond more reliably to a five-point frequency metric (1 = *Never*, 2 = *Hardly Ever*, 3 = *Sometimes*, 4 = *Most of the Time*, 5 = *Always*) than to a dichotomous yes/no response format. Further, students more reliably responded to safety and pluralism items that were based on a scale with no mid-point. Hence, four-point choices were utilized for both the Safety items (1 = *Never*, 2 = *Once or Twice*, 3 = *3-5 Times*, 4 = *6 or More Times*) and the Support for Cultural Pluralism items (1 = *Never*, 2 = *Hardly Ever*, 3 = *Sometimes*, 4 = *Often*).

To identify items with stable loadings and examine the degree to which items exhibited strong and stable relationships with the dimensions they were intended to measure, we conducted exploratory factor analyses and subsequent confirmatory analyses on the 125 revised items. For these analyses, we drew on two samples of schools in a Midwestern state that participated in two consecutive years of data collection for the project in which this work was embedded. The samples increased from Year 1 ($n = 4,309$ students in 11 schools) to Year 2 ($n = 12,291$

students in 31 schools). Students in each of these samples were divided into two sub-samples by random assignment. We refer to these sub-samples as the exploratory and the confirmatory sub-samples. In the first sub-sample, from each year separately, the factor loadings of the ISC-S items were examined in an exploratory factor analysis. With each of the confirmatory sub-samples, we attempted to replicate the factor structure that was obtained in the exploratory analysis by using a Procrustes rotation, as described by Nunally (1978). The overall stability of the ISC-S factor structure was assessed by examining the similarity of factor loadings across the two exploratory and confirmatory sub-samples, using the coefficient of congruence (Tucker, 1951). Items were retained if they exhibited stable loadings in both sub-samples in both years (i.e., loadings greater than .35 on the same factor in both samples), and no loadings greater than .35 on any other factor. Across both sets of sub-samples and both years these criteria were met by 61 of the original 112 items. The remaining items were removed to shorten and focus the scale.

A second approach to examining the factor structure of the ISC-S, maximum likelihood confirmatory factor analyses (Bollen, 1989), was also conducted on the 61-item scale using the two confirmatory sub-samples described above to further refine the item selection. We examined a ten-dimensional “pure-factor” model, in which items loaded on one of the ten climate dimensions described above, as well as an eleven-factor model in which the Safety Problems scales were divided into two sub-scales. The CFI and NFI fit indices for these models in both years were lower than .90, suggesting that further revisions to the scale and model were needed (Hu & Bentler, 1999). From the 61-item scale, 8 items were cut because of (a) low factor loadings on the target factor, or (b) modification indices suggesting that the item had high loadings on more than one factor. We also cut three Safety Problem items that referred to

incidents that took place on the way to and from school, so that the resulting scale focused on incidents that took place on school grounds.

These steps produced a 50-item instrument that assessed ten distinct dimensions of school climate, consisting of Disciplinary Harshness, Negative Peer Interactions, Positive Peer Interactions, Structure and Clarity of Rules and Expectations, Student Commitment to Achievement, Teacher Support, Instructional Innovation, Student Participation in Decision-Making, Support for Cultural Pluralism, and Safety Problems. The results of the exploratory and Procrustean factor analyses, and the maximum likelihood confirmatory factor analyses, across two different years of samples and students suggest that this dimensional structure is quite robust. The resulting 50-item ISC-S serves as the basis for the analyses in Study 2.

Study 2

A primary goal of Study 2 was to confirm the underlying dimensional structure of the ISC-S scales in a larger and more diverse sample of schools. Analyses in this study also sought to further examine and establish (a) the internal consistency of ratings across the items that comprise each of the ISC-S scales, (b) the extent to which demographic sub-samples of students in the same building provide consistent ratings and structures for school climate assessments, and (c) the degree to which there is longitudinal stability in the ratings of social climate over time even when there is the predictable turnover in students that results from annual graduations, promotions to the school, and mobility.

Study 2 Samples

The data collection procedures described in Study 1 were employed in the present study as well but with a far larger sample of schools. The samples for Study 2 involved schools that

participated in three consecutive years of the “scaling up” of the initiative. During each of these years some new schools were added and a few left the initiative. These changes provided for both a core of schools for which repeated, longitudinal data were available, and for what might be considered three not fully overlapping annual cohorts. In considering the results it is useful to keep in mind that if a school contains grades 6-8 then, after two years, a minimum of two-thirds of the students have left and been replaced by new students. Given the issue of student mobility the actual number of new students in most buildings each year is far more than would be due simply to graduation into and out of the building. These conditions make it useful and important to understand the degree to which there is stability in the social climate of middle/secondary school buildings even as the population of students in the building is constantly shifting.

We obtained usable data on the school climate scales from over 105,000 students in 188 schools across sixteen states *for the first year of the analyses in Study 2*. We refer to this sample as the *year one cohort*. The second year of Study 2 yielded an even larger sample that consisted of over 145,000 students in 278 schools. We refer to this as *year two cohort*. Two years after the collection of data from the year one cohort, climate ratings were obtained from a third further expanded sample. This *year three cohort* included over 161,000 students in 300 schools. Analyses of the temporal stability of climate ratings utilized a sub-sample of the schools in the year one cohort that also participated in the year two and/or the year three cohort. Of the 188 schools that comprised the year one cohort, 159 schools also provided student ratings of climate as part of the year two cohort, and 136 schools in cohorts one collected ratings of climate as part of the year three cohort.

The overall sample of schools encompassed schools in urban, suburban, small town and

rural communities. To allow for the subgroup analysis with which we were concerned our overall samples contain an over-sampling of schools with high levels of economically and socially disadvantaged students. In the overall data-set, approximately 44% of the students were from minority racial/ethnic groups, and 46% participated in the subsidized lunch program. Hence, the data set in Study 2 provides extensive samples of schools and students, with sufficient numbers and diversity of both school observations and sampling of the population within each school to address the methodological concerns in these areas raised in the introduction.

Results

Structure of Students' Perceptions of School Climate

The first set of analyses in this phase of the work sought to replicate the structure of the ISC-S with three far larger and more representative samples of schools and students. Maximum likelihood confirmatory factor analysis (CFA) was employed to assess the goodness of fit between the ten-factor model identified in Study 1 and the observed covariance between items (Bollen, 1989). These confirmatory analyses were conducted on those students in the *year one cohort* of Study 2 who provided complete ratings on all of the fifty ISC-S items ($n = 66,375$). A "pure" ten-factor model was employed, in which each item was allowed to load on only the latent construct that item is intended to assess. These latent factors were allowed to covary, and residual covariances were fixed to zero. This level of fit attained by this model (CFI = .90; NFI = .90) was such that further modifications to the measurement model were again considered (Hu & Bentler, 1999). Since ratings of climate items might reflect the influence of more than one dimension, we modified the measurement model to allow items to load on more than one factor based on the degree to which these additional factor loadings contributed to the overall fit of the

model to the data. The addition of 42 item-factor loadings (generally less than .2 in magnitude) resulted in an adequate level of fit (CFI = .951; NFI = .950). Students' ratings of items exhibited moderate to high loadings with their target factors, as shown in Table 1.

Insert Table 1 Here

As shown in Table 2, moderate to high levels of internal consistency were found for the ISC-S scales. Coefficient alpha ranged from .63 for Instructional Innovation to .81 for Student Commitment (median $\alpha = .72$).

Insert Table 2 Here

Stability of Climate Ratings Over Time

To assess the building-level stability of climate scores, we computed the correlation of ISC-S scale scores across one- and two-year test-retest intervals. As noted above, data in each year were collected at the start of the Spring Semester, when students have had the opportunity to develop firm perceptions of the school environment. We examined the stability of scores both at the whole school and the grade level. As shown in Table 3, correlations between ISC-S ratings over one year ranged from .67 to .91 (median $r = .76$; $n = 159$ schools). Over a two-year interval, correlations between ISC-S ratings ranged from .25 to .87 (median $r = .52$; $n = 136$ schools). At the grade level, moderate levels of one-year test-retest stability were found for Grade 6 (median $r = .56$), Grade 7 (median $r = .63$) and Grade 8 (median $r = .53$). The correlations between grade-

level ISC-S scores across two years were more modest.

Insert Table 3 Here

Structure and Congruence of ISC-S ratings among diverse student populations

We next turn to the extent to which the ISC-S provides reliable scale scores when it is used to measure the climate experiences of students from diverse backgrounds. In order to address this issue, we divided the overall sample from the year one cohort into sub-samples by sex, race, grade level, and participation in the subsidized lunch program. Adequate levels of internal consistency (typically .7 or above) were obtained for the ISC-S scales in each of these sub-samples. We next examined the extent to which the same underlying dimensional structure was found among students from diverse backgrounds. We tested the assumption that factor loadings were identical across samples by comparing the fit of a model in which loadings were constrained to be invariant with a less restrictive model in which factor loadings were allowed to vary across sub-samples. The imposition of invariant factor loadings resulted in a small, but statistically significant, decrease in the fit of the model to the data. A significant reduction in fit was found for models that contained invariant factor loadings across samples of: a.) boys and girls ($\chi^2(50, N = 62,413) = 3,508, p < .001$); b.) students who participated in the Federally subsidized lunch program as well as those from more affluent households ($\chi^2 = (50, N = 61,781) = 922, p < .001$); c.) White, Black, Hispanic, and Asian students completing the English Language version of the ISC-S ($\chi^2 = (150, N = 44,667) = 920, p < .001$); and d.) Hispanic students completing the English and Spanish Language versions of the ISC-S ($\chi^2 = (50, N =$

6,300) = 317, $p < .001$). However, these results must be interpreted with caution. Given the large sample sizes employed in the present study, even minute differences in factor loadings between groups may be statistically significant (Hayduk, 1987). The assumption of factorial invariance may be rejected even when the differences in factor loadings across samples are quite small. Illustratively, the introduction of invariant factor loadings across samples of boys and girls resulted in a statistically significant decrease in fit. One factor loadings differed by .11 across samples, all of the remaining loadings for males differed by less than .1, and for all but six items the loadings differed by less than .05. Similarly, factor loadings did not differ substantially by lunch status, race, or language. The coefficient of congruence (Tucker, 1951) between the factor loadings across samples was very high in each of the cross-group analyses described above. These findings suggest that the ISC-S provides structurally similar measurement of the climate perceptions across groups of students.

As we consider the above findings it might also be the case that ratings of climate might vary significantly among sub-groups of students within the same school building and such important variation between student groups might be obscured when overall climate scores are computed for the student body as a whole. We examined this issue in several ways. First, to examine the convergence of climate ratings among students in the same schools, we utilized split-sample procedures described by Richards and colleagues (Richards, Gottfredson & Gottfredson, 1991). Students within each school were assigned at random to one of two sub-samples, and parallel sets of school-level climate scores were computed from each sub-sample. Climate scores were found to be highly correlated across these randomly divided sub-samples of students across 188 schools in the year one cohort (median $r = .88$). High levels of convergence

were also found when students in the same schools were divided into sub-samples based on their demographic characteristics. Ratings of school climate by males and females were closely associated across schools (median $r = .81$) as were ratings by white and minority students (median $r = .81$) and students who were eligible for the federally subsidized lunch program versus those from more relatively affluent households (median $r = .86$). Cumulatively, these findings suggest that the ISC-S scales possess high levels of inter-observer reliability and consistency for students from diverse backgrounds.

Inter-Rater Convergence on Ratings of School Climate

The above analyses focus on the whole school or on large sub-groups of students within the school. Such analyses, because of their population or sub-population level focus, may obscure important variance at the *individual* student level. That is, even though the average climate perceptions of groups within a school may be highly similar, within buildings individual students may have vastly different experiences. Analyses that focus on the association of climate ratings with adjustment and achievement at the level of the population or sub-population as a whole may provide important information for those whose questions lie at those levels, and are the principal focus of this work. But, it is also important to understand the degree to which individual students' experiences may vary by contrast to the larger group norms, as such information may help to point to further ways to consider how experiences of school climate may be related to within-school or student-level interventions.

To examine the degree to which students' ratings of climate vary between schools, relative to the amount of variation within schools, Hierarchical Linear Modeling (HLM) was utilized to partition the variance on the ISC-S scales into within-school and between-school

components, and to compute the Intraclass Correlation Coefficient for each ISC-S scale (Rowen, Raudenbush, & Kang, 1991). As shown in Table 2, just as in other studies which have focused on similar questions with regard to instruction and climate, variation between schools on the ISC-S scales was small relative to within-school variance. The Intraclass Correlation Coefficients indicated that between 4-14% on the variation in the ISC-S scales could be attributed to differences between schools. For each of the ISC-S scales, the between-school variance was statistically significant ($p < .001$) although modest.

Study 3

The primary focus of Study 3 is on the degree to which differences between schools, on the ISC-S social climate dimensions, were related systematically to students' academic achievement, behavior problems, and socio-emotional adjustment. Put otherwise we were concerned with examining the convergent and divergent validity of the ISC-S. Particular attention was given to the degree to which school climate dimensions were related to these outcomes after controlling for differences in key demographic characteristics of the student population and sub-populations

Procedure and Samples

Study 3 drew upon a broader set of measures that were part of the larger work. In addition to climate ratings on the ISC-S, this data set also included measures of student adjustment from three different sources: students, teachers and archival sources. These measures, typically collected early in the Spring Semester at the same time as the other measures (e.g. ISC-S), allow us to consider the relationship of school climate dimensions to multiple indicators of student adjustment and achievement from multiple sources. Since data were

collected on an annual basis from schools we were able to test for the replicability of the relationships found between climate and adjustment across successive cohorts of students.

Students completed the full set of the self-report measures of academic, behavioral, and socio-emotional adjustment described below, as well as the ISC-S in all 188 schools in the year one cohort. In subsequent years of student survey data collection, because of local decisions, some schools omitted certain elements of the student survey battery each year. So, for the year two cohort, of the 278 schools participating, 204 completed the entire survey set while, as shown in Table 4, some chose to drop some combination of the self-report measures of academic efficacy, delinquency, drug use attitudes/behavior, self-esteem, anxiety and depression. Of the year three cohort of 300 schools, 246 completed all of the measures while the remainder again dropped some measures of students' adjustment (typically anxiety and attitudes towards drug use). For a subset of schools teachers also provided ratings of students' behavioral adjustment and academic potential. Here the number of schools with teacher data were 117, 240 and 243 schools respectively. In all cases where teacher reports were obtained students' ratings of school climate were also collected.

Insert Table 4 Here

Achievement test scores on common metrics were available at the individual student level for two fairly large sub-samples of schools drawn from two states. In these two states all schools administered state-mandated tests of academic achievement at the 8th grade level. In the year one cohort, test scores were available at the student level for 101 schools in these two states. In the

year two cohort, scores were available for only for the 70 schools that were located in one of the two states. In this year, the other state did not administer their statewide test of academic achievement to students in the 8th grade. This second state re-instituted those assessments for the year three cohort, so that test scores were available at the individual student level from 100 schools for both of these states. Achievement test scores were available for most of the remainder of the participating schools, but the tests employed differed widely within and across the states in which these schools were located. In addition, with few exceptions, achievement test scores were not available at the individual student level in these states (as would be required for the hierarchical linear modeling analyses of climate and student achievement described below). Hence, archival-based achievement data was not included in our analyses except for those schools drawn from the two states noted above.

Measures

To assess school climate, the following analyses utilized the 50-item final revision of the ISC-S. Climate scores were calculated by computing the sum of ratings for the items that comprise each dimension and dividing this sum by the number of items. Items were scored only on the primary dimension on which they loaded, as shown in Table 1. Criterion measures of students' adjustment were obtained in three domains. To assess students' *academic adjustment*, we utilized standardized tests of academic achievement, students' grades, teachers' ratings of students' potential, and students' reports of their academic expectations, aspirations and efficacy. To measure levels of *behavioral adjustment*, we employed teachers' ratings of students' classroom behavior, and students' self-reported delinquency, and substance use attitudes and behavior. To assess *socio-emotional adjustment*, we utilized students' reports of self-esteem,

depression and anxiety. The measures were:

_____ *Academic Achievement.* Students' achievement in core academic content areas was assessed using scores on standardized tests of reading and mathematics that were administered in Grade 8. Students in States One and Two, described above, took their state's examination. In State One the examination was developed by that state's Board of Education to assess students' achievement of educational goals and objectives set by the state. In State Two the examination was based on a nationally standardized test (Comprehensive Test of Basic Skills) adopted by the state for use in their accountability testing. Both tests yield norm-referenced scores that compare students' performance with the average score of students in the same state, as well as criterion-referenced scores that assess students' attainment of standards. So that scores from both states could be included in the same analyses, Normal Curve Equivalent scores were employed.

_____ *Grade Point Average.* Students reported their grade point average (GPA) on a five-point scale (1 = *Mostly D's and below*, 5 = *Mostly A's and B's*). Consistent with earlier research (e.g., Fetters, Stowe, & Owings, 1984), at the school level, students' reports of their grades were related strongly to their grades on school records ($r = .89$).

Academic Potential. To assess the academic expectations that were held by teachers, classroom teachers of core academic subjects were asked to rate each student's academic potential on a five-point scale (1 = *has the ability to graduate from junior high/middle school*, 5 = *has the ability to complete a graduate/professional degree following college*). Our prior analyses have found that students reported higher teacher expectations in schools in which teachers' ratings of students' academic potential were significantly higher ($r = .80$).

Academic Expectations - reported by students. The "Student Expectations Scale" asked

students to indicate how likely it was they would attain each of four academic goals (e.g., “Do you think that you will graduate from high school?”) on a 1-5 scale (1 = *Definitely Won’t*, 5 = *Definitely Will*). The “Teacher Expectations Scale” examined students’ perceptions of teacher expectations by asking them to indicate on the same five-point scale the degree to which their teachers thought that it was likely that the student would reach each of the four academic goals. Scores on the Student and Teacher Expectations scales were obtained by computing the average of the item ratings. Adequate levels of reliability were found for the measures, $\alpha = .76$ and $\alpha = .68$, respectively.

Academic Aspirations and Efficacy. In order to measure *Academic Aspirations*, students were asked to rate the importance of high school graduation and college attendance to themselves and to their parents. The individual student’s score on the Academic Aspirations scale was obtained by computing the average of the item ratings. To assess *Academic Efficacy*, students responded to five items pertaining to their effort and persistence in performing school work (e.g., “I think that if I tried harder I could do better in school”). Adequate levels of reliability were found for the measures of academic aspirations ($\alpha = .78$), and efficacy ($\alpha = .76$). The full set of items that comprise the academic expectations and aspirations scales are available from the authors.

Classroom Behavior. To obtain ratings of children's behavioral adaptation in the classroom, teachers completed the Teacher-Student Rating Scale (TSRS). The TSRS is adapted from and expands upon the Teacher-Child Rating Scale (TCRS; Hightower, Work, Cowen, Lotyczewski, Spinell, Guare, & Rohrbeck, 1986). Teachers were instructed to rate the degree to which each of 18 items was a problem in the classroom on a 1-5 scale (1 = *Not a Problem*, 5 = *A*

Very Serious Problem). The 18 TSRS items assess problems with aggressive behavior (e.g., *disruptive in class*), moody or withdrawn behavior (e.g., *anxious, worried*), and learning difficulties (e.g., *poor work habits*). A TSRS Total score for classroom behavior problems is computed by adding these item ratings ($\alpha = .93$). Analyses to assess the utility of these measures with the present sample suggest that the scale yields valid and informative data when utilized at the middle grade level. Illustratively, teachers' ratings of classroom behavior problems on the TSRS were related significantly to students' performance on standardized tests of academic achievement in reading ($r = -.38$) and mathematics ($r = -.40$), and to other indicators of students' behavioral adjustment, including self reported delinquent behavior ($r = .26$) and substance use attitudes ($r = .22$). The full set of TSRS items are available from the authors.

Delinquency. To assess the frequency of problem behaviors, items from the Delinquency scale of the Youth Self-Report (Achenbach & Edelbrock, 1987) were utilized. Students were instructed to indicate how often, in the past six months, they had done each of ten behaviors (e.g., *breaking rules at school*) using a five point scale (1 = *Never*, 5 = *More than 12 times*). The sum of these item ratings provided a total Delinquency score that possessed adequate internal consistency ($\alpha = .84$).

Drug Attitudes. Students' attitudes toward substance use were assessed using the Drug Attitudes Scale (Blau, Gillespie, Felner & Evans, 1988). This scale is comprised of fourteen attitudinal statements regarding the use of alcohol, tobacco and other drugs (e.g., *alcohol will help you to be friendly and outgoing*). Students were asked to indicate how strongly they agreed or disagreed with each statement on a 1-4 scale (1 = *Strongly Disagree*, 4 = *Strongly Agree*). Ratings of three items that indicated a negative item were reverse-scored, so that higher ratings of

all items indicated more positive attitudes toward substance use. The sum of these item ratings provided a total Drug Attitude Scale score that exhibited good internal consistency ($\alpha = .85$).

Substance Use. To assess the frequency with which students used alcohol, tobacco and other drugs, three items from the National Adolescent School Health Survey (Centers for Disease Control, 1989) were employed. Students were asked to indicate, for the past 30 days, the frequency of the following substance use activities (a) the number of cigarettes smoked (1 = none, 5 = More than 5 packs), (b) the number of times that they had used illegal drugs (1 = 0 times, 5 = More than 10 times), and (c) the number of times that they had at least one drink of alcohol (1 = 0 times, 5 = 20 or more times).

_____ *Self-Esteem.* To measure levels of self-esteem, we utilized the Self Evaluation Questionnaire (DuBois, Felner, Brand, Phillips, & Lease, 1996). The present study focuses on items that assess students' self-esteem in three domains: peer relations (e.g., *I am as good as I want to be at making new friends*), school (e.g., *I am as good a student as I would like to be*) and general self-esteem (e.g., *I am the kind of person I want to be*). Students are asked to indicate the extent to which they agree or disagree with each item using a four-point scale (1 = *Strongly Disagree*; 4 = *Strongly Agree*). Scores on the Peer Self-Esteem, School Self-Esteem, and General Self-Esteem scales are computed by averaging the students' ratings of items within each of these respective domains.

Anxiety. To assess anxiety, we employed items from the *Revised Children's Manifest Anxiety Scale* (RCMAS; Reynolds & Richman, 1978). Students were asked to respond to 16 yes-no items (e.g., *I get nervous when things do not go the right way for me*). The Anxiety score is computed as the total number of item that are endorsed by the student.

Depression. To measure levels of depression, the Children's Depression Inventory (Kovacs, 1992) was utilized. On each CDI item, students are asked to select one of three sentences that best describes their feelings and ideas over the past two weeks. The item is scored according to whether the student selects a sentence that represents a high, medium or low level of depression (e.g., 0 = *I have fun in many things*; 1 = *I have fun in some things*; 2 = *Nothing is fun at all*). The overall Depression score is computed as the sum of these item scores.

Results

The primary analyses of Study 3 examined the relationship between students' perceptions of school climate dimensions as assessed by the ISC-S and the student adjustment indices. Because the focus of this work was the impact of school-level climate on adjustment outcomes, hierarchical linear modeling was employed (Bryk & Raudenbush, 1992). The advantages of hierarchical linear modeling over ordinary least squares (OLS) methods have been discussed extensively (Bryk & Raudenbush, 1992; Raudenbush, Rowan, & Kang, 1991). Individual-level OLS analyses assume that sources of error in predicting students' outcomes are independent. When students are nested within schools, this assumption of independence yields standard errors that are too small, thereby inflating estimates of the size of school effects.

The HLM analyses examined the effects of school-level climate dimensions on individual outcome measures after controlling statistically for students' socio-economic background at the school-level. Each HLM analysis proceeded in three steps. First, an unconditional two-level model was estimated in which no school-level parameters were included. The unconditional model provided an estimate of the proportion of between-school variance in the criterion variable, and a baseline against which the effects of level-2 variables in subsequent models could

be compared. In the second step, school-level controls for student socio-economic status (i.e., the percentage of students who were eligible for the federally subsidized lunch program) were entered as a level-2 variable. The results of this model enabled us to estimate the amount of between-school variance in criterion measures that was accounted for by differences in the socio-economic composition of the student body. In the third model, school-level scores on one of the climate scales were added as level-2 variable. In this model, the significance of the school-level effects of climate were tested after controlling for the effects of student socio-economic status (Bryk & Raudenbush, 1992).

Our discussion of students' adjustment as it relates to the ISC-S is organized in keeping with the clustering of adjustment questions used above. That is we cluster our presentation of the results of our analyses as they relate to students' *academic adjustment*, *behavioral adjustment*, and *socio-emotional adjustment* respectively. For each set of analyses our hypothesis is that the degree to which students reflect more positive views and experiences of the school environment as reflected in the subscales of the ISC-S, they will also have more favorable outcomes on the various adjustment indices. Further, we expect that specific climate dimensions will be more consistently and significantly associated with particularly relevant domains of students' adjustment. We expect, for example, that students' experiences of the school as a place that is focused on academics would be most consistently and clearly associated with our academic adjustment measures, while those climate scales that focus on interpersonal relationships (e.g., teacher support, peer interactions) would be most consistently associated with behavioral and socio-emotional adjustment.

Academic Achievement and Adjustment

The first set of HLM analyses examined the relationship of school climate to students' academic performance, employing the assessments from the two states as discussed above. We found the most consistent and powerful predictor of school-level differences in students' performance to be the climate dimension of Student Commitment to Academic Achievement. Illustrative results of the analysis using this climate scale and Reading scores in State One are shown in Table 5. The results of the unconditional model indicate that Reading scores show a significant amount of between-school variance. School-level differences in the student population's socio-economic status, entered in Model One, account for a substantial proportion of the between-school variance (71.8%) in Reading scores in State One. Even after controlling for effects of school-level differences in socio-economic status, Student Commitment to Academic Achievement had a significant and positive relationship with Reading scores, accounting for an additional 4.6% of the between-school variance in Reading achievement.

Insert Table 5 Here

As shown in Table 6, higher levels of Student Commitment to Academic Achievement were also related significantly to higher Math scores. After controlling for the effects of school-level socio-economic status, the dimension of Student Commitment to Academic Achievement accounted for an additional 11.7% of the between-school variance in State One's Math scores.

Insert Table 6 Here

The relationship of State One's Reading and Math scores with Student Commitment to Achievement was replicated in the year two cohort. In addition, the dimension of Student Commitment to Academic Achievement was found to be related significantly to better achievement on the State Two's Reading and Math tests in both of the years in which these tests were administered. Cumulatively, these findings suggest that the relationship of this climate dimension to student achievement can be replicated across test subjects, states, and cohorts within states.

The next set of analyses examined the extent to which more positive student, population-level, school climate experiences were significantly associated with other indicators of students' academic adjustment and performance, including GPA, students' reports of self- and teacher-expectations, academic aspirations, and efficacy, and teachers' ratings of academic potential. The most consistent ISC-S predictor of students' academic adjustment was Student Commitment to Academic Achievement. Higher levels of this dimension were associated with better levels of all of the academic adjustment indices across all three samples. Table 7 shows illustrative results from the analysis of Student Commitment to Academic Achievement and Grade Point Average. In the Unconditional Model, significant between-school differences in GPA are found. The results of Model One indicate that between-school differences in students' socio-economic status account for a significant proportion (36.4%) of the variance in GPA. In Model Two, higher levels of Student Commitment to Academic Achievement were found to be related

significantly with higher GPA. The addition of this climate variable accounted for a further 15% of the between-school variance in GPA.

Insert Table 7 Here

Significant relationships between dimensions of climate and indices of students' academic adjustment are summarized in Table 8. This table shows the increase in the between-school variance in adjustment indicators that is explained by adding an ISC-S scale in Model Two, after controlling for the population differences between schools in students' socio-economic status. The increment in the percentage of variance explained by the ISC-S climate scale represents the effect size of the climate dimensions on school-level differences in academic adjustment, adjusting for school-level differences in S.E.S. Illustratively, the school-level effect of Student Commitment to Achievement on students' GPA was 15%, 9.5%, and 10% in the Year 1, Year 2, and Year 3 Cohorts, respectively.

Insert Table 8 Here

In addition to Student Commitment, a number of other dimensions of climate were found to be related consistently to multiple indices of students' academic adjustment. Across all three samples, more positive levels of grades, teacher expectations, academic aspirations and academic efficacy were found in schools with higher population mean levels of Teacher Support, Structure, Positive Peer Interactions, and Instructional Innovation. Students' experience of safety at school

was also important for their academic adjustment. In schools that students rated as having fewer Safety Problems, students reported higher self and teacher expectations, academic aspirations, and efficacy. Student Participation in Decision-Making, Support for Cultural Pluralism, Disciplinary Harshness, and Negative Peer Interactions were less often associated with indicators of academic adjustment. Still, higher grades and teacher expectations were associated with higher mean levels of Student Participation in Decision-Making, and lower levels of Disciplinary Harshness and Negative Peer Interactions, while higher student self-expectations and academic aspirations were related consistently with higher mean levels of Support for Cultural Pluralism.

Behavior Problems and Substance Use

The next set of HLM analyses examined the relationship between ISC-S climate scales and students' behavior problems and substance use. Students' adjustment in these areas was assessed both by teachers' ratings of classroom behavioral problems as well as students' self-reports of delinquency, drug attitudes, and substance use. The most consistent predictor of students' behavioral adjustment was Negative Peer Interactions. Across all three samples, better levels of all of the indices of students' behavioral adjustment were found in schools that had lower mean student population levels of this climate dimension. Table 9 shows illustrative findings from the HLM analyses of Negative Peer Interactions and students' self-reported delinquency. The results of the Unconditional Model indicate that levels of self-reported Delinquency exhibit significant, though modest, between school-differences. In Model One, school-level differences in student's socio-economic status account for a significant and substantial proportion of the between-school variance in delinquency (15.2%). In Model Two, higher levels of Negative Peer Interactions are related significantly with higher levels of

delinquency. The addition of this climate dimension accounts for a further 26% of the between-school variance in delinquency.

Insert Table 9 Here

Significant associations between climate dimensions and indicators of behavioral adjustment are summarized in Table 10. The increment in the percentage of variance explained by the ISC-S climate scale represents the school-level effect size of the climate dimensions on behavioral adjustment, adjusting for between-school differences in students' socio-economic status. Illustratively, the effect of Negative Peer Interactions on school-level differences in Delinquency was 26%, 23.6%, and 27.1% in the Year 1, Year 2, and Year 3 Cohorts, respectively.

In addition to the Negative Peer Interactions, further ISC-S dimensions were consistently associated with students' substance use attitudes and behaviors. Across all three samples, higher levels of smoking, drinking and drug use, and more favorable attitudes toward these activities, were found in schools that students rated as lower in Teacher Support, Student Commitment to Achievement, and Instructional Innovation, and higher in Safety Problems. Consistently, higher levels of both Delinquency and teacher-rated aggressive behavior by students were found in schools that students perceived as having higher levels of Negative Peer Interactions, Disciplinary Harshness and Safety Problems. In the year one and the year two cohorts, higher levels of Delinquency and Aggression were found in schools that students rated as having lower levels of Teacher Support, Student Commitment to Academic Achievement, Structure, and

Positive Peer Interactions. The climate dimensions of Support for Cultural Pluralism and Student Participation in Decision-Making were not related as consistently to indicators of students' behavioral adjustment.

Insert Table 10 Here

Socio-Emotional Adjustment. The final set of HLM analyses examined the relationship between the levels of students' climate ratings and indices of students' socio-emotional adjustment. To assess socio-emotional adjustment, we employed the measures of self-esteem, anxiety, and depression described above. Consistent findings were obtained only for the indices of peer self-esteem and depression. Across all three samples, higher levels of peer self-esteem, and lower levels of depression, were found in schools in which students reported higher levels of Teacher Support, Structure, Student Commitment to Achievement, Positive Peer Interactions, and Instructional Innovation, as well as lower levels of Safety Problems. Findings from the analysis of Safety Problems and Depression are shown in Table 11. The results of Model One indicate that school-level differences in students' socio-economic status account for a significant proportion (32.5%) of the between-school variance in reported levels of depression. In Model Two, higher levels of Safety Problems are related significantly to greater depression, even after controlling for the effects of students' socio-economic status. The inclusion of Safety Problems in the HLM model accounts for an additional 30.0% of the between-school variance in depression.

Insert Table 11 Here

Table 12 shows the strength of the significant relationships noted above between ISC-S scales and indicators of students' socio-emotional adjustment. The increment in the percentage of variance explained by the ISC-S climate scale represents the effect size of the climate dimensions on school-level differences in socio-emotional adjustment, adjusting for students' socio-economic status. Illustratively, the effect of Safety Problems on Depression was 30%, 24.6%, and 36.1% in the Year 1, Year 2, and Year 3 Cohorts, respectively.

Insert Table 12 Here

Minority and Majority Students' Perceptions of School Climate and Adjustment

Where the overall analyses above were found to be significant, follow-up correlational analyses were conducted at the school level to examine possible differential patterns of relationship between ISC-S scales and adjustment outcomes among demographically different subgroups of students. Illustratively, previous studies suggest that levels of Support for Cultural Pluralism might have greater adaptational significance for students from minority racial and ethnic backgrounds (Epstein, 1985; Green, Adams, and Turner, 1988). In the current analyses, findings that are consistent with this view were found in all three validation samples. Schools that were rated by minority students as having higher levels of Support for Cultural Pluralism were ones in which minority students exhibited significantly higher levels of adjustment. The

relationship between minority students' ratings of cultural pluralism and their adjustment outcomes was significant even after partialling out the effects of students' socio-economic status. Specifically, in schools that minority students rated as having higher levels of Support for Cultural Pluralism, minority students exhibited higher academic expectations and aspirations, lower levels of delinquency and substance use, and better socio-emotional adjustment. Among white students, the relationship between Support for Cultural Pluralism and adjustment outcomes was weaker. While Support for Cultural Pluralism exhibited a differential relationship with the adjustment of minority students across all three validation cohorts, the other climate scales did not exhibit such a consistent and replicable difference in their relationship to the adjustment of minority and white students. That is, differential relationships between climate and adjustment measures that were found in one cohort of students did not emerge as significant across all three cohorts.

Discussion

The present work was undertaken to develop a reliable and more comprehensive assessment of students' experiences of school climate dimensions that are related systematically to levels of academic, behavioral and socio-emotional adjustment. In order to assess the effects of school improvement efforts on students' educational experiences, it is necessary to have reliable measures of school-wide climate, and to be sure that these measures characterize students' experiences within a robust framework of underlying dimensions. Earlier studies have raised concerns regarding both the reliability of climate instruments (Fraser, 1982; Tolsma, Menne & Hopper, 1976), and the extent to which these instruments assess a consistent framework of underlying dimensions (Manderscheid, Keonig, & Silbergeld, 1977; Nelson, 1984;

Trickett & Quinlan, 1979; Walker & Richman, 1984). Because of the number and diversity of the schools sampled in the present work, the high levels of student participation within these schools, and the longitudinal nature of our data, we were able to address these concerns in Study 1 and Study 2. The ISC-S was found to possess high levels of internal consistency across items and stability over time, and the dimensional structure of the ISC-S was replicated across multiple samples of students. Our findings of high temporal stability in ISC-S climate scores suggest that these ratings reflect features of the school environment that persist over time even as the student membership changes due to graduation, admission, and student mobility. Evidence for the temporal stability of these scores suggests that climate is a characteristic of school settings that is useful for (a) understanding and characterizing schools over time, and (b) reflecting and/or assessing the impact of any real and powerful transformation of the school's context and functioning.

For the assessment of whole school climate, it is vitally important to determine the extent to which population-level mean scores on the climate scales provide an accurate reflection of the views of student sub-populations within the building. To more fully understand the impact of comprehensive school improvement initiatives, we need to determine the extent to which measures of school climate are representative of the views of diverse student sub-populations. Because the development of the ISC-S was based on a large and diverse sample of schools and students within schools, it was possible to address this issue. The findings of Study 2 suggest that there is a very strong relationship between the climate ratings of demographically different sub-populations within schools. Consistently, we found a significant and quite strong association between the climate ratings of boys and girls, white and minority students, and students from

economically disadvantaged homes and those from more affluent households. It is also necessary that the climate measure provide a psychometrically sound assessment for specific student sub-populations. The findings of Study 2 suggest that the ISC-S scales possess high levels of internal consistency, and a robust factor structure, for each of the student sub-populations discussed above. Cumulatively, these findings suggest that the ISC-S yields scores that are reliable and representative for all students and student subgroups within school buildings.

While the findings of the present study suggest that there is a strong relationship between the climate assessments of different student sub-populations within the school, our results do not support the view that ratings of climate reflect a consensus of opinion that is common across all of the *individual students* within the building. On the contrary, a considerable amount of variation was found within schools in students' climate ratings. The results of the intraclass correlation analyses, reported in Study 2, suggested that only 4-14% of the variation in the ISC-S scales could be attributed to between-school differences. While the present study found slightly higher levels of between-school variance that has been reported in earlier research (e.g., Griffith, 2000), our results are nonetheless provide support to the view that experiences of climate differ considerably more within schools that they do between schools.

Because students' ratings of climate vary substantially within schools, it is important to utilize multi-level modeling to examine the extent to which between-school variation in students' adjustment outcomes can be explained by differences in the mean level of climate dimensions. Characteristically, studies of climate and student adjustment have examined their relationship at the individual student level, or else have looked at the correlation between school means on climate and adjustment measures. The findings of the Study 3 are consistent with those of a

number of initial HLM-based investigations suggesting that, while ratings of climate may vary substantially within schools, school-level differences in the average level of climate dimensions nonetheless account for a substantial proportion of the variation between schools in students' achievement and other outcomes (Phillips, 1997; Rowen, Raudenbush, & Kang, 1991). The magnitude of the relationships between the climate dimensions and students' adjustment outcomes was noteworthy. In the present work, school-level scores on Student Commitment accounted for ten percent or more of the variance between schools in students' scores on indices of academic adjustment. A broad range of climate dimensions accounted for ten percent or more of the between-school variance in teachers' expectations, students' reports of academic aspirations and efficacy, as well as multiple indicators of students' behavioral adjustment. Cumulatively, these findings suggest that school-level scores on the climate scales account for a meaningful amount of variation in students' adjustment outcomes, and that the data provided by these ratings can inform our efforts to carry out comprehensive school improvement.

In order to develop a more adequate understanding of these relationships, we sought to determine whether climate dimensions were correlated with measures of adjustment that were collected from sources other than students' self-report. Correlations between students' ratings of climate dimensions and their self-reported adjustment are prone to the potential problem that shared method variance might inflate the size of the relationship between climate and adjustment measures. It is noteworthy that, in the present work, a number of consistent and significant relationships were found between students' ratings of climate and assessments of students' adjustment that were obtained from archival sources (e.g., standardized tests of Reading and Math achievement) and teachers' reports (e.g., ratings of academic potential and classroom

behavioral adjustment). These findings lend support to the view that climate dimensions have a substantive relationship with differential levels of students' adjustment that is not merely an artifact of shared method variance.

Of equal importance is the finding that students' reports of school climate were related significantly, and in many cases quite strongly, to a wide array of adjustment indices even when the variance associated with characteristics of the student population were partialled out, or controlled statistically. A potential difficulty in many earlier studies of the adaptational significance of classroom and school climate is that the associations found between climate dimensions and students' adaptation might have arisen as an epiphenomenon of the relationships among climate, adjustment, and students' socio-economic status. The results of Study 3 indicate that a wide range of climate dimensions are related to students' adjustment even after school-level differences in students' socio-economic status are taken into account. These findings are consistent with the view that the linkage between school climate and students' adjustment is not merely a product of differential levels of socio-economic status in the student population.

Across three validation samples, the dimensions of climate assessed by the ISC-S were found to be related systematically to academic achievement, behavior problems, substance use, and socio-emotional adjustment. The consistency of these findings suggests that the relationships found are reasonably robust and general, rather than being limited to a particular cohorts of students or adjustment indices. The cumulative pattern of relationships from this study also suggests that, in order to develop a more complete understanding of the how students' experiences of the school environment affects their adjustment, multiple dimensions of school climate must be assessed. Aspects of students' experience that are critical for their adjustment

and development may be overlooked when school climate is treated as a uni-dimensional entity, or when assessments of climate focus too narrowly on a limited set of sub-dimensions.

A broad and multi-dimensional approach to school climate may be particularly important for understanding factors in the school environment that are related to students' academic achievement. Better performance on achievement tests were (~~~should be was) found in schools in which students reported higher levels of the Student Commitment to Achievement dimension. This finding agrees with those of earlier studies that suggest a critical association between achievement goals and students' academic performance in middle level schools (e.g., Phillips, 1997; Shouse, 1996). It is noteworthy that students' grades, and broader indices of academic adaptation, were found to be correlated not only with this dimension of climate, but also with students' perceptions of the developmental sensitivity of the school as reflected in teacher support, the structure and clarity of rules and expectations, instructional innovation, and support for cultural pluralism. Indices of academic adjustment were also found to be related consistently with dimensions of climate that assessed the quality of peer relationships and students' problems with personal safety. In order to guide school reform efforts in ways that can increase students' academic performance, it is important to assess the degree to which academic achievement is emphasized in the school and adopted as a value by students' peer groups. However, the assessment of school climate should not be limited only to the dimension of student commitment to academic achievement, but should also consider the more comprehensive set of climate dimensions noted above that relate to students' academic aspirations, expectations and self-efficacy.

Our findings concerning students' behavioral adjustment add to the findings of earlier

studies suggesting that students' experiences of climate are related to problems with attendance and classroom behavioral problems (e.g., Felner, Aber, Cauce & Primavera, 1985; Moos, 1979). In addition, our findings suggest that, at the middle grade level, students' experiences of school climate are related consistently with their substance abuse attitudes and behavior. This finding is of particular importance given the fact the middle school years are ones in which many students initiate smoking, drinking or drug use, and that such early initiation of substance use has been found to be associated with a wide array of negative academic and developmental outcomes during adolescence and beyond. Our findings again suggest that efforts to guide school reform in ways that can address problems with substance use and other behavior problems need to attend not just to a single aspect of school climate but to a broader and more comprehensive range of multiple climate dimensions. While negative peer interactions have a pervasive relationship with students' behavioral adjustment, it is also important to consider peer group values concerning academic achievement and prosocial behavior, the quality and consistency of school discipline, students' exposure to safety problems, and students' access to guidance and support from teachers.

With respect to students' socio-emotional adjustment, it is noteworthy that dimensions of school climate were found to be related significantly with between-school variation in students' reports of peer self-esteem and depression. While prior studies have suggested a linkage between climate and socio-emotional adjustment (e.g., Felner, Aber, Cauce, & Primavera, 1985; Nelson, 1984), the samples have generally been limited to a small number of schools, and have not provided for an investigation of the between-school variation in students' socio-emotional adjustment and climate. The present work is among the first to find that a relationship, at the

school level, between students' reports of peer self-esteem and depression and their experiences of school climate. The nature of this relationship is multidimensional; conditions that are associated with better adjustment include higher peer commitment to academic achievement and prosocial behavior, greater access to teacher support, higher levels of structure and clarity in rules and expectations, and lower levels of exposure to safety problems.

Cumulatively, our results are consistent with the view that students' achievement and adjustment outcomes are more likely to improve when school improvement efforts bring about comprehensive change in multiple dimensions of social climate, rather than focusing on piecemeal or fragmentary change in single elements of the school environment (Felner et. al., 2000, 2001). Climate dimensions that are related to one domain of student adjustment indices tend to be related to students' adjustment in other domains. These findings suggest that the relationship of climate to adjustment is not strictly categorical; it does not appear to be the case that distinct dimensions of climate matter for students' academic, behavioral and socio-emotional adjustment. Rather, attention must be given to assessing a broad array of climate dimensions regardless of which of these domains of student adjustment is of primary concern.

Efforts to prevent the onset of academic problems and adjustment difficulties in early adolescence need to be cognizant of conditions in the school environment that are developmentally hazardous for students who are undergoing the transition from elementary to junior high school (Felner et. al., 2001). It is noteworthy that the climate dimensions that were found to be related to students' adjustment in the present work are ones that are often problematic for students during this critical school transition. Numerous studies have found that, compared with elementary school, students experience junior high schools as offering less

supportive and personal ties with teachers, less consistency and clarity in organization and expectations, less emphasis on the mastery in depth of academic tasks and skills, and fewer opportunities to participate in decision-making, as well as greater peer conflict and exposure to safety problems (Felner et al, 1993; Midgley & Edelin, 1998; Midgley & Feldlaufer, 1987; Seidman, Allen, Aber, Mitchell, & Feinman, 1994). The ISC-S appears to measure a number of dimensions of the school social environment that are potential mediators of the academic and developmental outcomes of school transitions.

Having developed a model of the “first order” factors that characterize students’ experiences of school climate, and having found evidence that these factors relate systematically to students’ adjustment across a wide range of indicators, we considered Moos’ (1979) conception in which sub-dimensions of climate are subsumed under a broader framework of three over-arching dimensions (i.e., Personal Relationships, Personal Growth, and System Maintenance and Change). In order to investigate the deeper “second-order” dimensions underlying the ISC-S scales, we conducted confirmatory factor analyses to assess a structural model in which the ten ISC-S scales loaded on four second-order dimensions, using procedures described in Bollen (1989). A good fit to the data (NFI and CFI > .95) was obtained from a model that contained the following higher-order dimensions:

- *Developmental Sensitivity* was comprised of the Teacher Support, Instructional Innovation, Structure and Clarity of Rules and Expectations, Student Participation in Decision-Making, and Support for Cultural Pluralism items;
- *Academic/Prosocial Orientation* encompassed the Student Commitment to Academic Achievement and the Positive Peer Interactions items;

- *Contextual Negativity* included the Negative Peer Interactions and the Disciplinary Harshness items
- A distinct *Safety Problems* dimension included the items related to harm, theft, drugs, violence and other problems.

The results of these analyses suggest that an empirically-based framework of higher-order dimensions might be employed to characterize students' experiences of school climate and to investigate the relationship of these higher-order dimensions to students' adjustment..

A number of limitations to the present work should be noted. First, the school climate scales that were employed in the present study are measures of the perceived school environment. The relationship between students' ratings of climate dimensions and other assessments of the school environment, particularly by teachers and building administrators, is an area that awaits further investigation. Second, the relationships found between the school climate dimensions and multiple indices of students' adjustment, while supportive of the construct validity of these scales, are merely cross-sectional in nature. Future research in this area might examine the reciprocal relationships between climate and adjustment in a longitudinal framework.

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Table 1

Item Loadings for the Confirmatory Factor Analysis of Students' Climate Ratings

Subscale		Item
Name	Items	Loading ^a
Teacher Support		
	1. Teachers go out of their way to help students.	.68
	2. If students want to talk about something teachers will find time to do it.	.63
	3. Teachers help students to organize their work.	.62
	4. Students really enjoy their classes.	.56
	5. Teachers help students catch up when they return from an absence.	.57
	6. Teachers take a personal interest in students.	.48
Consistency and Clarity of Rules and Expectations		
	1. If some students are acting up in class the teacher will do something about it.	.64
	2. When teachers make a rule, they mean it.	.62
	3. Students are given clear instructions about how to do their work in classes.	.61
	4. Students understand what will happen to them if they break a rule.	.59
	5. Teachers make a point of sticking to the rules in classes.	.54

(table continues)

Subscale	Item	Loading
Name	Items	Loading
Student Commitment/Achievement Orientation		
	1. Students work hard for good grades in classes.	.76
	2. Students try hard to get the best grades they can.	.74
	3. Grades are very important to students.	.71
	4. Students work hard to complete their assignments.	.64
	5. Students put a lot of energy into what they do here.	.53
Negative Peer Interactions		
	1. Students in this school have trouble getting along with each other.	.69
	2. Students in this school are mean to each other.	.64
	3. In classes, students find it hard to get along with each other.	.57
	4. There are students in this school who pick on other students.	.56
	5. Students in this school feel students are too mean to them.	.53
Positive Peer Interactions		
	1. Students get to know each other well in classes.	.60
	2. Students in this school are very interested in getting to know other students.	.59
	3. Students enjoy doing things with each other in school activities.	.58
	4. Students in this school get to know each other really well.	.52
	5. Students enjoy working together on projects in classes.	.52

(table continues)

Subscale	Item	Loading
Name	Items	Loading
Disciplinary Harshness		
	1. The rules in this school are too strict.	.58
	2. It is easy for a student to get kicked out of class in this school.	.57
	3. Students get in trouble for breaking small rules.	.54
	4. Teachers are very strict here.	.53
	5. Students get in trouble for talking.	.50
Student Input in Decision-Making		
	1. In our school, students are given the chance to help make decisions.	.71
	2. Students in this school have a say in how things work.	.50
	3. Students get to help decide some of the rules in this school.	.55
	4. Teachers ask students what they want to learn about.	.55
	5. Students help decide how class time is spent.	.50
Instructional Innovation/Relevance		
	1. New and different ways of teaching are tried in classes.	.64
	2. New ideas are tried out here.	.56
	3. Teachers like students to try unusual projects.	.51
	4. In classes, we are given assignments to help us find out about things outside of school.	.51

(table continues)

Subscale	Item	
Name	Items	Loading
Support For Cultural Pluralism		
	1. Your teachers show that they think it is important for students of different races and cultures at your school to get along with each other.	.64
	2. Students of many different races and cultures are chosen to participate in important school activities.	.61
	3. You get to do something which helps you learn about students of different races and cultures at your school.	.57
	4. You work with students of different races and cultures in a school activity.	.55
Safety Problems		
	1. Anyone at school threatened to beat you up or hurt you if you didn't give them your money or something else that belonged to you?	.69
	2. Anyone actually beaten you up or really hurt you when you were at school?	.67
	3. Bring something to school to protect yourself?	.54
	4. Been afraid that someone will hurt or bother you at school?	.49
	5. Has anything worth more than a dollar been stolen from your desk or locker at school when you weren't around?	.48
	6. Has anyone offered or tried to sell you drugs at school?	.47

^a Tabled values are standardized path coefficients from latent factors.

Table 2

Internal Consistency and Variance Across Schools

Sub-Scale	N of Items	Internal Consistency ^a	Percent Variance Between Schools ^b
Teacher Support	6	.76	5.2%
Clarity of Rules and Expectations	5	.74	4.5%
Student Commitment	5	.81	6.1%
Negative Peer Interactions	5	.73	4.7%
Positive Peer Interactions	5	.70	3.7%
Disciplinary Harshness	5	.67	5.5%
Participation in Decision-Making	5	.70	7.4%
Innovation	4	.63	6.3%
Support for Cultural Pluralism	4	.68	14.0%
Safety Problems	6	.71	3.6%

^a Coefficient alpha. ^b Intra-class correlation

Table 3

Stability of Climate Ratings at the School and Grade Level

Sub-Scale	School		<u>Grade Level</u>					
	Level		Grade 6		Grade 7		Grade 8	
	1 Yr	2 Yr	1 Yr	2 Yr	1 Yr	2 Yr	1 Yr	2 Yr
Teacher Support	.67	.39	.34	.24	.54	.41	.47	.28
Clarity of Rules and Expectations	.70	.28	.33	.22	.69	.26	.51	.32
Student Commitment	.79	.48	.58	.24	.69	.43	.57	.42
Negative Peer Interactions	.75	.37	.60	.24	.55	.31	.47	.34
Positive Peer Interactions	.72	.25	.64	.27	.56	.19	.41	.18
Disciplinary Harshness	.83	.60	.63	.42	.63	.41	.56	.49
Participation in Decision-Making	.81	.75	.47	.39	.64	.70	.63	.59
Innovation	.78	.56	.55	.38	.70	.58	.63	.41
Support for Cultural Pluralism	.91	.87	.66	.31	.84	.78	.89	.79
Safety Problems	.69	.59	.64	.16	.55	.50	.30	.22
Median	.76	.52	.56	.25	.63	.42	.53	.37

Table 4

Alternate Student Survey Forms Employed in Each Cohort

Year One Cohort (n = 188 schools)

___ All schools utilize the Long Form of the Student Survey.

Year Two Cohort (n = 278 schools)

Short Form (n = 40 schools)

Grades, Academic Expectations and Aspirations

Intermediate Form (n = 34 schools)

All Short Form measures, Academic Efficacy, Delinquency, Drug Use, Self-Esteem

Long Form (n = 204 schools)

All Intermediate Form measures, Drug Attitudes, Anxiety, Depression

Year Three Cohort (n = 300 schools)

Short Form (n = 31 schools)

Grades, Academic Expectations and Aspirations

Intermediate Form (n = 23 schools)

All Short Form measures, Academic Efficacy, Delinquency, Drug Use, Self-Esteem,

Depression

Long Form (n = 246 schools)

All Intermediate Form measures, Anxiety, Drug Attitudes

Table 5

HLM Models Predicting Reading Scores in State One (Year 1 Cohort)

	Unconditional Model		Model 1		Model 2	
Fixed	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Base	239.8 **	4.96	239.7 **	2.79	239.7 **	2.49
Lunch	-----	-----	-1.4 **	0.10	-1.4 **	0.10
Commitment	-----	-----	-----	-----	49.8 *	20.97
Random	Variance	χ^2	Variance	χ^2	Variance	χ^2
Intercept	1232.8	1709.2	347.5	497.6	291.0	401.4
Level-1	7407.8		7407.7		7407.7	
Reliability	.962		.880		.861	
Between-School						
Variance Explained	-----		71.8%		76.4%	

* p < .05 ** p < .001

Table 6

HLM Models Predicting Math Scores in State One (Year 1 Cohort)

	Unconditional Model		Model 1		Model 2	
Fixed	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Base	269.7 ***	6.01	269.7 ***	3.66	269.8 ***	3.03
Lunch	-----	-----	-1.6 ***	0.15	-1.7 ***	0.13
Commitment	-----	-----	-----	-----	94.5 ***	23.18
Random	Variance	χ^2	Variance	χ^2	Variance	χ^2
Intercept	1834.8	3042.6	671.0	1202.2	456.8	807.2
Level-1	6280.3		6280.0		6279.8	
Reliability	.978		.943		.919	
Between-School						
Variance Explained	-----		63.4%		75.1%	

*** p < .001

Table 7

HLM Models Predicting Grade Point Average (Year 1 Cohort)

	Unconditional Model		Model 1		Model 2	
Fixed	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Base	3.89 ***	.02	3.89 ***	.02	3.89 ***	.01
Lunch	-----	-----	-.01 ***	.00	-.01 ***	.00
Commitment	-----	-----	-----	-----	.61 ***	.09
Random	Variance χ^2		Variance χ^2		Variance χ^2	
Intercept	.065	3177.6	.041	2239.2	.032	1680.9
Level-1	1.466		1.211		1.211	
Reliability	.922		.887		.860	
Between-School						
Variance Explained	-----		36.4%		51.4%	

*** p < .001

Table 8

Significant School-Level Effects of Climate Dimensions on Indices of Academic Adjustment

Cohort	Scale	Grades	Self Expectations	Teacher Expectations	Academic Aspirations	Academic Efficacy	Academic Potential
<u>Year 1 Cohort</u>							
	Student Commitment	15.0	4.5	14.7	18.5	32.8	6.1
	Teacher Support	7.8	n.s.	15.5	6.5	19.4	1.4
	Structure	6.1	1.2	5.9	20.4	33.3	n.s.
	Positive Peer Interactions	3.3	1.6	5.5	10.7	21.9	1.7
	Instructional Innovation	8.7	n.s.	10.4	9.3	13.6	3.4
	Safety Problems	n.s.	5.1	2.0	31.7	22.5	n.s.
	Cultural Pluralism	n.s.	1.3	n.s.	2.6	n.s.	3.3
	Decision-Making	7.9	n.s.	8.3	n.s.	n.s.	3.0
	Disciplinary Harshness	6.0	1.5	6.1	n.s.	n.s.	n.s.

(table continues)

Cohort	Scale	Grades	Self Expectations	Teacher Expectations	Academic Aspirations	Academic Efficacy	Academic Potential
	Negative Peer Interactions	6.1	n.s.	4.6	2.9	5.9	6.5
<u>Year 2 Cohort</u>							
	Student Commitment	9.5	7.6	33.4	17.1	24.2	4.6
	Teacher Support	3.3	2.7	28.6	6.7	16.9	n.s.
	Structure	2.5	n.s.	16.7	18.0	21.0	n.s.
	Positive Peer Interactions	1.9	7.6	13.4	9.8	11.7	n.s.
	Instructional Innovation	6.1	2.3	26.3	5.8	7.8	1.8
	Safety Problems	n.s.	3.5	3.8	25.4	12.2	n.s.
	Cultural Pluralism	n.s.	2.8	n.s.	2.7	n.s.	n.s.
	Decision-Making	5.5	n.s.	23.9	n.s.	n.s.	1.7
	Disciplinary Harshness	5.6	n.s.	15.4	n.s.	3.1	1.3
	Negative Peer Interactions	7.9	n.s.	13.0	2.2	n.s.	4.4

(table continues)

Cohort	Scale__	Grades	Self Expectations	Teacher Expectations	Academic Aspirations	Academic Efficacy	Academic Potential
<u>Year 3 Cohort</u>							
	Student Commitment	10.0	9.0	29.4	20.5	36.7	3.6
	Teacher Support	3.2	n.s.	21.8	6.5	20.6	n.s.
	Structure	1.6	n.s.	9.4	18.5	28.7	n.s.
	Positive Peer Interactions	1.6	n.s.	2.9	13.9	19.3	n.s.
	Instructional Innovation	4.4	2.3	21.1	5.8	14.3	n.s.
	Safety Problems	1.1	4.4	4.4	33.3	14.3	n.s.
	Cultural Pluralism	n.s.	1.4	n.s.	2.3	n.s.	n.s.
	Decision-Making	4.2	n.s.	18.6	n.s.	n.s.	n.s.
	Disciplinary Harshness	7.8	n.s.	16.1	n.s.	n.s.	n.s.
	Negative Peer Interactions	10.3	n.s.	15.8	2.4	n.s.	3.4

Tabled values are school-level effects sizes (i.e., the increment in the percent of between-school variance accounted for when the school-level mean on the climate scale is added in HLM Model 2). n.s. = relationship not statistically significant at $p < .05$.

Table 9

HLM Models Predicting Delinquency (Year 1 Cohort)

	Unconditional Model		Model 1		Model 2	
Fixed	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Base	1.82 ***	.009	1.82 ***	.008	1.82 ***	.007
Lunch	-----	-----	.002 ***	.000	.001 ***	.000
Negative Interactions	-----	-----	-----	-----	.422 ***	.051
Random	Variance χ^2		Variance χ^2		Variance χ^2	
Intercept	.013	1847.5	.011	1627.1	.007	1160.1
Level-1	.549		.540		.540	
Reliability						
Between-School						
Variance Explained	-----		15.2 %		41.2 %	

*** p < .001

Table 10

Significant School-Level Effects of Climate Dimensions on Indices of Behavioral Adjustment

Cohort_	Scale	Classroom		Drug	Cigarette	Drug	Alcohol
		Aggression	Delinquency	Attitudes	Smoking	Use	Use
<u>Year 1 Cohort</u>							
	Negative Peer Interactions	10.9	26.0	4.4	18.7	6.6	7.9
	Teacher Support	2.2	26.8	17.8	29.3	26.5	20.9
	Student Commitment	4.2	35.2	26.5	53.5	40.8	31.0
	Safety Problems	1.9	15.7	20.1	31.4	25.9	26.0
	Instructional Innovation	n.s.	19.5	8.5	23.5	16.2	11.3
	Disciplinary Harshness	5.5	14.2	n.s.	n.s.	n.s.	n.s.
	Structure	4.3	24.5	28.6	37.2	38.2	28.7
	Positive Peer Interactions	2.4	21.2	17.4	22.9	22.8	18.1

(table continues)

Cohort	Scale	Classroom	Drug	Cigarette	Drug	Alcohol	
		Aggression	Delinquency	Attitudes	Smoking	Use	Use
<u>Year 2 Cohort</u>							
	Negative Peer Interactions	13.4	23.6	3.6	14.2	8.9	11.0
	Teacher Support	4.2	19.8	19.4	15.9	20.5	17.2
	Student Commitment	7.1	35.8	31.9	39.3	38.6	40.1
	Safety Problems	5.9	17.4	28.9	26.6	45.0	32.6
	Instructional Innovation	2.5	16.7	11.3	17.1	12.7	14.8
	Disciplinary Harshness	8.8	18.4	3.3	3.6	3.4	5.6
	Structure	9.1	16.8	29.9	25.8	37.1	36.1
	Positive Peer Interactions	1.9	13.1	13.4	8.6	18.7	13.4

(table continues)

Cohort	Scale	Classroom Aggression	Delinquency	Drug Attitudes	Cigarette Smoking	Drug Use	Alcohol Use
<u>Year 3 Cohort</u>							
	Negative Peer Interactions	10.4	27.1	1.9	9.2	6.7	6.6
	Teacher Support	n.s.	n.s.	15.1	13.4	11.6	12.2
	Student Commitment	3.7	n.s.	28.0	22.7	19.7	17.0
	Safety Problems	4.7	23.3	26.5	34.4	40.2	34.2
	Instructional Innovation	n.s.	n.s.	6.2	11.0	5.6	7.4
	Disciplinary Harshness	4.7	21.6	n.s.	n.s.	1.2	3.0
	Structure	n.s.	n.s.	24.6	n.s.	n.s.	n.s.
	Positive Peer Interactions	n.s.	n.s.	10.6	n.s.	n.s.	n.s.

Tabled values are school-level effects sizes (i.e., the increment in the percent of between-school variance accounted for when the school-level mean on the climate scale is added in HLM Model 2).

Note. n.s. = relationship not statistically significant at $p < .05$.

Table 11

HLM Models Predicting Depression (Year 1 Cohort)

Fixed	Unconditional Model		Model 1		Model 2	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Base	1.41 ***	.004	1.41 ***	.003	1.41 ***	.003
Lunch	-----	-----	.001 ***	.000	.001 ***	.000
Safety Problems	-----	-----	-----	-----	.341 ***	.034
Random	Variance χ^2		Variance χ^2		Variance χ^2	
Intercept	.0024	1368.6	.0016	998.6	.0009	660.3
Level-1	.107		.107		.107	
Reliability	.834		.784		.687	
Between-School						
Variance Explained	-----		32.5		62.6	

*** p < .001

Table 12

Significant School-Level Effects of Climate Dimensions on Indices of Socio-Emotional Adjustment

Cohort	Scale	Peer Self-	
		Esteem	Depression
<u>Year 1 Cohort</u>			
	Safety Problems	12.5	30.0
	Teacher Support	5.1	11.1
	Structure	4.0	16.5
	Student Commitment	6.3	15.6
	Positive Peer Interactions	3.1	15.6
	Instructional Innovation	6.8	9.9
<u>Year 2 Cohort</u>			
	Safety Problems	16.8	24.6
	Teacher Support	13.7	5.3
	Structure	13.7	13.9
	Student Commitment	10.3	7.5
	Positive Peer Interactions	9.1	8.6
	Instructional Innovation	8.5	3.2

(table continues)

Cohort	Scale	Peer Self-	
		Esteem	Depression
<u>Year 3 Cohort</u>			
	Safety Problems	9.0	36.1
	Teacher Support	19.8	5.3
	Structure	64.8	9.6
	Student Commitment	30.5	9.1
	Positive Peer Interactions	28.4	6.3
	Instructional Innovation	24.5	1.9

Tabled values are school-level effect sizes (i.e., the increment in the percent of between-school variance accounted for when the school-level mean on the climate scale is added as a Level-2 variable in HLM Model 2).

Note. n.s. = relationship not statistically significant at $p < .05$.

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