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# Relationships Between Perceived School Climate and Adolescent Mental Health Across Genders

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**Abstract** The current study explored the relationship between school climate perceptions and self-reported mental health among 415 high school students. Mental health was defined comprehensively via indicators of positive functioning (life satisfaction) and psychopathology (internalizing and externalizing problems). Regression analyses indicated that students' perceptions of six dimensions of school climate (sharing of resources, order and discipline, parent involvement, school building appearance, student interpersonal relations, and student–teacher relations) accounted for a total of 15–22 % of the variance in indicators of their mental health, above and beyond between-school differences in outcomes. Bivariate links emerged between positive perceptions of each school climate dimension and better mental health. Parent involvement was the most consistent unique predictor of mental health. Worse perceptions of the peer interpersonal relations, equal sharing of school resources, and physical appearance of one's school building uniquely predicted greater psychopathology (externalizing and internalizing problems, respectively), whereas teacher–student relations were particularly associated with wellness (among girls only). Across indicators, school climate was more highly associated with girls' mental health. Directions for future research and implications for educators are discussed.

**Keywords** School climate · Psychopathology · Wellness · Gender differences

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## Introduction

Historically, psychology has focused on symptoms and deficits and defined "mental wellness" as the absence of psychopathology. Psychopathology is not synonymous with complete mental health, however, as wellness and psychopathology are not simply opposite ends of the same continuum (Keyes, 2006). At the turn of the century, leaders in the field of positive psychology (e.g., Diener, 2000; Seligman & Csikszentmihalyi, 2000) advocated for a paradigm shift toward a more comprehensive conceptualization of mental health that includes markers of well-being such as life satisfaction. Increasing the well-being of all students then becomes an important goal, particularly when viewed as a potentially preventative approach to promoting all students' mental health. Such sentiments extend and echo conclusions from related research on developmental assets, or the relationships, skills, and perceptions thought to promote positive youth development (Benson & Scales, 2009; Lerner, Brentano, Dowling, & Anderson, 2002). The current study focuses on a specific indicator of well-being, life satisfaction. The following literature review describes how students' perceptions of school climate are associated with their mental health, including traditional negative indicators such as psychopathology and positive indicators of wellness such as subjective well-being. Understanding these relationships is important in part because school climate is a target amenable to preventative and intervention efforts at a universal level (White & Warfa, 2011). The current study aimed to identify the overall contribution of perceived school climate to student psychopathology and well-being, determine the dimensions of school climate that drive effects, and explore the consistency of these relationships across genders. Such a comprehensive study of relationships between school climate and a modern

definition of mental health provides insight into the extent to which school climate can be expected to relate to optimal psychological functioning in all students.

## Conceptualizing School Climate

There is general agreement in the literature that school climate is a complex, multi-dimensional construct. Key areas that appear to cut across conceptualizations of school climate include issues of safety, relationships, teaching and learning, and institutional environment (Cohen & Geier, 2010). The National School Climate Council (2007) advanced that school climate involves "patterns of school life experiences and reflects norms, goals, values, interpersonal relationships, teaching, learning and leadership practices, and organizational structures" (National School Climate Council, 2007, p. 5). The current study adopted a six-dimension conceptualization of school climate that was delineated by Haynes, Emmons, and Ben-Avie (2001) for assessing the school climate of high schools. Specific dimensions include sharing of resources, order and discipline, parent involvement, school building appearance, student interpersonal relations, and student–teacher relations. Sharing of resources refers to the extent to which every student has equal opportunity to participate in school activities and utilize school materials and equipment. Order and discipline relates to the appropriateness of student behavior within the school. The frequency with which parents participate in school activities is the focus of parent involvement. School building appearance pertains to the physical appearance of the school building from both the outside and inside. The social dimensions of student interpersonal relations and student–teacher relations refer to how positively classmates, as well as teachers and their students, interact and treat one another, respectively.

Despite advances in conceptualizations, there is not consensus as to which dimensions are necessary and/or sufficient to include in assessments in order to adequately capture a school's climate (Cohen & Geier, 2010). The literature also lacks agreement as to the optimal strategies for measurement (e.g., student vs. teacher report, observer ratings) of school climate. When considering a given school's climate, one might reflect on whether it feels welcoming and warm, or how respectfully its students and staff interact. Although such broad impressions like "teachers at this school really care about their students" and "this school is well-maintained and attractive" may present as rather objective and absolute, there is much greater variability in student perceptions *within* a given school than *between* schools (Fan, Williams, & Corkin, 2011). Individual students' perceptions are often linked to their later functioning. Case in point, longitudinal studies of youth in elementary through high school have found that children's individual perceptions of several aspects of school climate (e.g., perceived friction between classmates, satisfaction with classes, interpersonal relations with teachers, student autonomy) predicted their later symptom levels of conduct problems, depression, and personality disorders (Kasen, Cohen, Chen, Johnson, & Crawford, 2009; Loukas & Murphy, 2007). Such links between students' school climate perceptions and mental health are detailed next by major climate dimension.

## Relationships Between School Climate and Student Mental Health

Research on various components of school climate (e.g., student–teacher relations, school connectedness) has often indicated inverse relationships with adolescent psychopathology (Kasen, Johnson, & Cohen, 1990; Resnick et al., 1997). For instance, Kasen et al. (1990) found that after 2 years of perceiving one's school to have high levels of conflict between teachers and students, students had higher levels of attention problems, oppositional behaviors, and conduct problems. In more recent research, individual students' perceptions of positive student–teacher relationships have been associated with lower rates of depressive symptoms (LaRusso, Romer, & Selman, 2008), and greater school-level aggregate student perceptions of a supportive school climate (i.e., perceived care and respect from teachers) predicted students' likelihood of seeking help from teachers for bullying or threats of violence (Eliot, Cornell, Gregory, & Fan, 2010). Perceptions of positive student interpersonal relationships (i.e., characterized by high cohesion and low friction and competitiveness) predict lower rates of later conduct problems (albeit indirectly through associations with school connectedness; Loukas, Suzuki, & Horton, 2006) and inverse cross-sectional associations with depressive symptoms (Loukas & Robinson, 2004). Non-social dimensions of school climate are also important. When high school students perceive their schools to have clear and fair rules, they are less likely to engage in delinquent behavior or be victimized (Gottfredson, Gottfredson, Payne, & Gottfredson, 2005). Furthermore, student perceptions of school climate have also been shown to moderate the influence of risk factors such as self-criticism and low effortful control on mental health; specifically, students who were particularly self-critical or had difficulty with inhibition or sustaining attention were protected from elevations in internalizing and externalizing problems when they held positive perceptions of their school climate (Kuperminc, Leadbeater, & Blatt, 2001; Loukas & Robinson, 2004). Overall, school context perceptions account for approximately 13–18 % of the variability in emotional distress among adolescents (Resnick et al., 1997).

School climate perceptions may link to student psychopathology differently across genders. Kuperminc et al. (1997) found that school climate perceptions were more consistently associated with psychopathology among middle school boys than girls. However, teacher bonding (a component of school climate akin to teacher–student relations) was more important for high school girls in terms of predicting externalizing psychopathology (Crosnoe, Erickson, & Dornbusch, 2002). Though perceived cohesion among students relates to both boys' and girls' externalizing and internalizing problems, student competition is more strongly associated with boys' externalizing and internalizing problems than girls', while friction among classmates and perceived satisfaction with classes were uniquely related to internalizing problems in girls (Loukas & Robinson, 2004). More research is needed to clarify the associations between school climate and psychopathology across genders and to delineate which specific components of school climate, if any, matter more for a particular gender.

Examining school climate in relation to students' psychopathology provides only a limited understanding as to how school climate may influence mental health. It has been long recognized that comprehensive understandings of mental health need to include more than examinations into the absence of illness (Jahoda, 1958). Modern models of mental health among adolescents consider both the absence of psychopathology and the presence of positive indicators of wellness (Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008). Global life satisfaction, defined as one's cognitive appraisals on personal happiness with one's life in general, is one important positive indicator of mental health (Diener, 2000). About half of a person's happiness is considered to be biologically based, leaving the rest of the variance in happiness amenable to change via altering one's intentional behaviors, thoughts, and surroundings (Lyubomirsky, Sheldon, & Schkade, 2005). Adolescents' happiness may be particularly susceptible to environmental influences, such as school climate. Indeed, Ash and Huebner (2001) revealed that chronic environmental experiences, such as ongoing problems with peers, had greater associations with adolescents' life satisfaction than the occurrence of major life events (e.g., death of a family member, parental divorce). High schools are a central context in which adolescents develop their academic, social, and career-focused identities (Laguardia & Pearl, 2009). The unique context of high school can shape adolescents' relationships with peers and teachers at a time when social relationships are highly valued (Baumeister & Leary, 1995). Thus, students' positive perceptions of school climate may be tied to superior well-being, in addition to yielding inverse associations with psychopathology.

Previous research with 321 teenagers attending the same high school found differences in students' perceptions of school climate accounted for a substantial amount of the variance (i.e., 14 %) in their life satisfaction (Suldo, Shaffer, & Riley, 2008). School climate was measured in line with Haynes et al.'s (2001) model, and students' perceptions of teacher–student relations and parent involvement emerged as the dimensions of school climate that drove the effect. That study is one of only a handful to examine any aspect of school climate in relation to any indicator of youth wellness; replication with independent samples is needed. Also, it is currently unknown if school climate is more tied to students' wellness (i.e., life satisfaction) or problems, such as symptoms of internalizing and externalizing disorders.

The purpose of this study was to explore which aspects of mental health have the strongest associations with high school students' perceptions of school climate, above and beyond any between-school differences in mental health. To date, no published studies have examined positive and negative indicators of mental health simultaneously in relation to school climate. Given that school climate can be a protective factor that affects large numbers of students daily, further understanding of both the positive and negative relationships between students' complete mental health and their perceptions of the school context is critical. Thus, the current study operationalized mental health as the presence of a positive indicator of wellness (life satisfaction) in addition to traditional indicators of psychopathology (specifically, internalizing and externalizing problems). This study also set out to determine whether gender moderates the relationship between students' perceptions of school climate and mental health, and to delineate which dimensions of perceived school climate have unique associations with positive and/or negative indicators of mental health among boys and girls.

## Method

### Participants

Participants included 415 (60 % girls, 40 % boys) high school students attending three public high schools in a southeastern state. School A is a typical suburban high school; participants were from grades 9–12, and in general education ($n = 87$) or a college-preparatory track ($n = 86$). School B is a magnet school for high-achieving youth; all 63 participants were 9th grade students enrolled in specialized academic programs, such as those focused on math or sciences. School C is also a magnet school, with a college-preparatory mission; all 179 participants (from grades 9 to 12) took primarily college-level or

college-preparatory courses. Participants in the combined sample ranged in age from 13 to 18 years ($M = 15.46$; SD = 1.23). The sample was ethnically diverse (51 % Caucasian, 19 % African-American, 12 % Hispanic, 9 % Asian, 6 % multi-racial, and 3 % students of other ethnic background). The diversity within the sample is similar to the demographic features of the population in the state from which the sample was drawn with the exception of the underrepresentation of Hispanic youth (28 % of the state) and overrepresentation of Asian youth (2 % of state population; Florida Department of Education, 2010). A total of 19 % of participants reported receiving free or reduced-price school lunch, used as an indicator of low socioeconomic status (SES).

## Measures

### *Global Life Satisfaction*

The Students' Life Satisfaction Scale (SLSS; Huebner, 1991) was administered to assess students' global satisfaction with life. The SLSS was designed for use with students in grades 3–12 (Huebner, 1991). Participants indicated their level of agreement with seven general statements about their life (e.g., I have a good life, I have what I want in life). Response options range from 1 (*strongly disagree*) to 6 (*strongly agree*). An overall life satisfaction score was attained by reverse-scoring two negatively phrased items and then by averaging participants' responses. Higher mean SLSS scores indicate higher global life satisfaction.

The SLSS has high internal consistency ($\alpha = 0.82$ to 0.88) and test–retest reliability at 1–2 weeks ($r = 0.74$; Huebner, 1991) and 4 weeks ($r = 0.64$; Gilman & Huebner, 1997). The construct validity of the SLSS is supported by strong associations with other measures of subjective well-being, such as the Piers-Harris Happiness Subscale ($r = 0.53$) and the Andrew–Withey Life Satisfaction Scale ($r = 0.62$; Huebner, 1991). A positive relationship ($r = 0.54$) between SLSS scores and parent ratings of their children's happiness further supports convergent validity (Gilman & Huebner, 1997). In the current study, coefficient alpha of the SLSS was 0.89.

### *Youth Psychopathology*

The Youth Self-Report From of the Child Behavior Checklist (YSR; Achenbach & Rescorla, 2001) is a 112-item self-report measure of psychopathology that assesses eight areas of problem behavior in children 11 to 18 years of age, including anxious/depressed, withdrawn/depressed, somatic complaints, rule-breaking behavior, aggressive behavior, social problems, thought problems, and attention problems. The current study analyzed the 31- and 32-item composites for internalizing problems (sum of items in the anxious/depressed, somatic complaints, and withdrawn/depressed subscales) and externalizing problems (sum of items in the aggressive behavior and rule-breaking behavior subscales), respectively. Students reported the degree to which feelings or behaviors were accurate for them currently, or in the past 6 months, responding on a 3-point Likert scale from 0 (*not true*) to 2 (*very true or often true*).

The YSR Internalizing and Externalizing Problems composites represent patterns of co-occurring behaviors as indicated by factor analysis (Achenbach & Rescorla, 2001). The reliability of these problem composite scores is considered high, as coefficient alpha values exceed 0.90 (Achenbach & Rescorla, 2001). The YSR has demonstrated high test–retest reliability at 8-days for the Internalizing and Externalizing Problems composites, with correlations of 0.80 and 0.89, respectively. The YSR technical manual provides evidence of the construct validity of the Internalizing Problems composite via strong correlations with the Depression checklist of the DSM-IV ($r = 0.59$) and the Internalizing scale of the Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992). Parent and Teacher report versions ($r = 0.75$ to 0.83). Construct validity of the YSR Externalizing Problems composite is supported by large correlations with the Conduct Disorder checklist of the DSM-IV ($r = 0.62$) and the BASC Externalizing scale ($r = 0.74$ to 0.88). In the current study, coefficient alphas for the YSR Internalizing and Externalizing Problem composites were 0.90 and 0.87, respectively.

### *School Climate*

The School Climate Survey—High School Student Version, Revised (SCS; Haynes, Emmons, & Ben-Avie, 2001) is a 42-item scale used to measure students' feelings and perceptions about their individual school. School perceptions are categorized into six domains, including order and discipline (safety and degree to which rules are followed), student interpersonal relations (students' behavior and treatment of one another), student–teacher relations (competence and relational ability of teachers), parental involvement (communication between home and school and frequency of parent visits to the school), building appearance (appearance and upkeep of school building), and sharing of resources (degree to which all students can access school resources and activities equally). Students endorse statements using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A mean score for each domain is calculated after the appropriate items are reverse scored. The manual reports an internal consistency above 0.70 for each of the domains. In the

current study, the coefficient alpha values were as follows: 0.65 (equal sharing of resources), 0.74 (order), 0.74 (parental involvement), 0.78 (school building appearance), 0.89 (student–teacher relations), and 0.90 (peer relations).

### Procedures

A consent form explaining the purpose of the study was sent home to all students in three geographically diverse high schools in order to obtain parent permission for their child to participate in the study. Students who returned signed parent consent forms and chose to participate in the study (i.e., provided written assent) were eligible to receive incentives through several drawings at the school for gift cards to local malls. Between 63 and 179 students from each school participated, representing approximately 10 % of students at a given school. Response rates were low primarily due to the research team's reliance on homeroom teachers (who had varying levels of interest and investment in the study) to distribute and collect students' parent consent forms. In the winter of 2006, students with signed parent consent and child assent were called in groups of 25–50 to fill out a demographic form and then complete the self-report measures described above. Completion of all measures took approximately 45 min. To minimize order effects, the measures were arranged in six different orders and each student was randomly assigned a survey packet.

### Overview of Data Analysis Plan

All data analyses were conducted using Statistical Analysis Software (SAS). An alpha level of 0.05 was used to determine statistical significance. Bivariate correlations were calculated to explore the relationships between the six school climate dimensions, psychopathology, and life satisfaction. ANOVAs using GLM Method I (Type III), which adjusts for unequal sample sizes within cells, were conducted to determine whether between-school differences existed in students' perceptions of school climate and mental health. In the case of a significant univariate effect, results of Tukey–Kramer tests and group means were examined.

Then, three simultaneous regression analyses were conducted to determine the extent to which school climate dimensions predicted each indicator of mental health among the entire high school student sample. A dummy-coded school variable was entered as a covariate in these and all subsequent regression analyses, in part to isolate the influence of students' perceptions of school climate in predicting mental health above and beyond what can be expected by any between-school differences in the mental health indicator. This fixed-effect approach was selected because the small number of schools ($n = 3$) precluded the use of multi-level modeling, in which school would have been treated as a level-2 random factor. Beta weights were examined to determine which specific school climate dimensions uniquely predicted a mental health outcome. Squared semipartial correlations ($sr^2$) indicated the percent of variance in an outcome accounted for by a given school climate dimension above and beyond that of the remaining school climate dimensions.

Additional regression analyses were conducted to test gender as a moderator in the relationship between school climate and mental health. To address potential multicollinearity between the predictors, moderator, and the interaction terms, predictor variables were first centered. Then, three series (one for each indicator of mental health) of six regressions (one for each school climate dimension) were conducted. Each regression included the covariate school, a single school climate dimension, gender, and a term representing the interaction of gender and the same school climate dimension (e.g., life satisfaction = school + student–teacher relations + gender + gender * student–teacher relations). Effects of significant interaction terms were clarified by regressing the mental health outcome on the school climate dimensions by gender group.

## Results

### Bivariate Associations Between Psychopathology, Life Satisfaction, and School Climate

Table 1 presents means, standard deviations, and Pearson product-moment correlations among all continuous variables. Acceptable levels of skew (−0.82 to 1.14) and kurtosis (−0.22 to 1.49) were obtained for each variable. The majority of the intercorrelations between the six domains of school climate were statistically significant ($p < 0.05$) and ranged in magnitude from small to large ($r = 0.12$ to 0.68). The strongest bivariate relationships existed between peer interpersonal relations and student–teacher relations ($r = 0.58$) and peer interpersonal relations and order and discipline ($r = 0.68$). Parent involvement was not significantly correlated with building appearance or with sharing of resources. There was a moderate, positive correlation ($r = 0.44$) between internalizing and externalizing forms of psychopathology. Life satisfaction yielded moderate, negative correlations with both internalizing and externalizing problems ($r = -0.53$ and −0.45, respectively). Regarding associations between the predictor and criterion variables, life satisfaction yielded small to moderate positive, significant associations with all six dimensions of school climate ($r = 0.19$ to 0.37). The school climate dimensions showed small to moderate inverse, significant relationships with both

**Table 1** Means, standard deviations, and intercorrelations among predictor and outcome variables

| Variable | *M* | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Student–teacher relations | 3.62 | 0.70 | 1 | | | | | | | | |
| 2. Peer interpersonal relations | 3.22 | 0.70 | 0.58*** | 1 | | | | | | | |
| 3. Parental involvement | 2.27 | 0.72 | 0.26*** | 0.20*** | 1 | | | | | | |
| 4. Building appearance | 3.19 | 0.72 | 0.40*** | 0.22*** | 0.12* | 1 | | | | | |
| 5. Sharing of resources | 3.30 | 0.61 | 0.40*** | 0.36*** | 0.05 | 0.25*** | 1 | | | | |
| 6. Order and discipline | 3.28 | 0.69 | 0.46*** | 0.68*** | 0.13** | 0.29*** | 0.38*** | 1 | | | |
| 7. Life satisfaction | 4.19 | 0.99 | 0.34*** | 0.37*** | 0.32*** | 0.19*** | 0.23*** | 0.27*** | 1 | | |
| 8. Internalizing problems | 11.81 | 8.74 | −0.32*** | −0.26*** | −0.21*** | −0.29*** | −0.28*** | −0.28*** | −0.53*** | 1 | |
| 9. Externalizing problems | 11.22 | 7.38 | −0.28*** | −0.30*** | −0.18*** | −0.22*** | −0.18*** | −0.21*** | −0.45*** | 0.44*** | 1 |

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

internalizing and externalizing problems ($r = -0.18$ to $-0.32$).

## Between-School Differences in School Climate and Mental Health

Table 2 presents school-level means and standard deviations for each school climate dimension and mental health indicator.

### *School Climate*

Mean levels of student perceptions of parent involvement were statistically similar across schools. Mean levels of student perceptions of student–teacher relations and sharing of resources were slightly higher among students at School B in comparison with students at School A. These effects are small, in that between-school differences account for only 2 % of the variance in students' perceptions of these school climate dimensions. Moderate between-school differences ($R^2 = 0.076$) were observed in students' perceptions of school building appearance, with students at School A reporting higher mean scores than students at School B and School C (whose perceptions were similar). The largest between-school differences in mean levels of school climate were found in students' perceptions of peer interpersonal relations and order/discipline. Specifically, students at School B reported higher means levels of peer interpersonal relations and order within their school in comparison with students at School C, who in turn perceived higher levels of both school climate dimensions than students at School A. Between-school differences accounted for 18 % of the variance in students' perceptions of these two school climate dimensions; the remaining 82 % of variance in school

**Table 2** Mean school climate perceptions and mental health of students in different schools

| Variable | School A ($n = 173$) | | School B ($n = 63$) | | School C ($n = 179$) | | *F* | $R^2$ |
|---|---|---|---|---|---|---|---|---|
| | *M* | SD | *M* | SD | *M* | SD | | |
| Student–teacher relations | $3.52_a$ | 0.70 | $3.81_b$ | 0.76 | 3.65 | 0.66 | 4.17* | 0.02 |
| Peer interpersonal relations | $2.89_a$ | 0.66 | $3.67_b$ | 0.57 | $3.38_c$ | 0.62 | 45.37*** | 0.18 |
| Parental involvement | 2.26 | 0.70 | 2.31 | 0.76 | 2.26 | 0.72 | 0.14 | 0.00 |
| Building appearance | $3.42_a$ | 0.64 | $3.13_b$ | 0.72 | $3.00_b$ | 0.73 | 16.88*** | 0.08 |
| Sharing of resources | $3.24_a$ | 0.61 | $3.50_b$ | 0.65 | 3.29 | 0.59 | 4.19* | 0.02 |
| Order & discipline | $2.95_a$ | 0.62 | $3.72_b$ | 0.64 | $3.44_c$ | 0.61 | 46.49*** | 0.18 |
| Life satisfaction | 4.18 | 0.97 | 4.45 | 1.03 | 4.10 | 0.98 | 2.81 | 0.01 |
| Internalizing problems | 11.33 | 8.22 | 11.95 | 10.74 | 12.23 | 8.47 | 0.48 | 0.00 |
| Externalizing problems | $10.31_a$ | 6.94 | 10.24 | 7.06 | $12.44_b$ | 7.75 | 4.35* | 0.02 |

Tukey–Kramer comparisons were employed to analyze group means in cases of significant *F* tests. Significant differences between group means are indicated by different letters. Means having the same subscript are not significantly different. Means not marked by letters are not significantly different from any group means

* $p < 0.05$; *** $p < 0.001$

climate perceptions can be attributed to differences among students within a given school.

*Mental Health*

Mean levels of life satisfaction and internalizing problems were invariant across schools. Mean levels of externalizing problems were slightly higher among students at School C in comparison with students at School A. This effect is small, in that between-school differences account for only 2 % of the variance in students' externalizing behavior.

## Multivariate Associations Between Mental Health and School Climate

A summary of results from the regression analyses is presented in Table 3.

*Internalizing Problems*

Among the total sample ($N = 415$), the linear combination of the fixed effect of school, and the six dimensions of school climate, accounted for 20 % of the variance in internalizing symptoms ($F$ [8, 404] = 12.30, $p < 0.001$, $R^2 = 0.196$). The main effect of school was not significant ($R^2 = 0.002$), and the linear combination of students' perceptions of school climate dimensions accounted for the remaining 19.4 % of variance in students' internalizing symptoms. After controlling for variance shared among the predictors, parent involvement ($\beta = -0.13$), building appearance ($\beta = -0.11$), sharing of resources ($\beta = -0.15$), and order and discipline ($\beta = -0.16$) independently related to differences in internalizing problems. Squared semipartial correlations ($sr^2$) indicated sharing of resources and parent involvement each accounted for 2 %

**Table 3** Student mental health predicted by dimensions of school climate

| Predictor | Total sample ($N = 415$) | | | | Boys only ($n = 165$) | | | | Girls only ($n = 250$) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $R^2$ | $B$ | SE $B$ | $\beta$ | $R^2$ | $B$ | SE $B$ | $\beta$ | $R^2$ | $B$ | SE $B$ | $\beta$ |
| Internalizing problems | 0.20 | | | | 0.16 | | | | 0.25 | | | |
| School A | | −1.89 | 1.02 | −0.11 | | −3.26 | 1.61 | −0.20* | | −0.59 | 1.26 | −0.03 |
| School B | | 1.42 | 1.18 | 0.06 | | 0.30 | 1.72 | 0.02 | | 3.59 | 1.59 | 0.13* |
| Student–teacher relations | | −1.21 | 0.75 | −0.10 | | −1.05 | 1.05 | −0.10 | | −1.43 | 1.02 | −0.11 |
| Peer interpersonal relations | | −0.60 | 0.87 | −0.05 | | −1.46 | 1.31 | −0.13 | | −0.32 | 1.12 | −0.03 |
| Parental involvement | | −1.62 | 0.57 | −0.13** | | −0.53 | 0.82 | −0.05 | | −2.72 | 0.74 | −0.22*** |
| Building appearance | | −1.34 | 0.66 | −0.11* | | −0.75 | 0.98 | −0.07 | | −0.96 | 0.86 | −0.08 |
| Sharing of resources | | −2.15 | 0.72 | −0.15** | | −0.77 | 1.10 | −0.06 | | −3.27 | 0.91 | −0.22*** |
| Order and discipline | | −2.06 | 0.85 | −0.16* | | −2.45 | 1.23 | −0.22* | | −1.24 | 1.11 | −0.09 |
| Externalizing problems | 0.17 | | | | 0.18 | | | | 0.20 | | | |
| School A | | −3.75 | 0.87 | −0.25*** | | −4.47 | 1.49 | −0.30** | | −3.42 | 1.08 | −0.23** |
| School B | | −0.94 | 1.01 | −0.05 | | −2.82 | 1.62 | −0.15 | | 0.47 | 1.36 | 0.02 |
| Student–teacher relations | | −0.75 | 0.64 | −0.07 | | −0.71 | 0.98 | −0.07 | | −0.64 | 0.87 | −0.06 |
| Peer interpersonal relations | | −3.06 | 0.74 | −0.29*** | | −3.72 | 1.21 | −0.35** | | −2.62 | 0.96 | −0.25** |
| Parental involvement | | −0.98 | 0.49 | −0.09* | | 0.17 | 0.77 | 0.02 | | −1.86 | 0.63 | −0.18** |
| Building appearance | | −0.38 | 0.57 | −0.04 | | −0.75 | 0.92 | −0.07 | | −0.17 | 0.74 | −0.02 |
| Sharing of resources | | −0.41 | 0.62 | −0.03 | | −0.06 | 1.03 | −0.00 | | −0.65 | 0.78 | −0.05 |
| Order and discipline | | −0.34 | 0.73 | −0.03 | | 0.10 | 1.15 | 0.01 | | −0.49 | 0.95 | −0.05 |
| Life satisfaction | 0.23 | | | | 0.19 | | | | 0.28 | | | |
| School A | | 0.31 | 0.11 | 0.15** | | 0.23 | 0.20 | 0.11 | | 0.34 | 0.14 | 0.17* |
| School B | | 0.16 | 0.13 | 0.06 | | 0.23 | 0.21 | 0.09 | | 0.08 | 0.17 | 0.03 |
| Student–teacher relations | | 0.14 | 0.08 | 0.10 | | 0.03 | 0.13 | 0.02 | | 0.24 | 0.11 | 0.16* |
| Peer interpersonal relations | | 0.37 | 0.10 | 0.26*** | | 0.32 | 0.16 | 0.22* | | 0.38 | 0.12 | 0.27** |
| Parental involvement | | 0.32 | 0.06 | 0.23*** | | 0.33 | 0.10 | 0.24** | | 0.31 | 0.08 | 0.22*** |
| Building appearance | | −0.01 | 0.07 | −0.01 | | −0.10 | 0.12 | −0.07 | | 0.02 | 0.09 | 0.01 |
| Sharing of resources | | 0.13 | 0.08 | 0.08 | | 0.22 | 0.13 | 0.14 | | 0.09 | 0.10 | 0.05 |
| Order and discipline | | 0.05 | 0.09 | 0.03 | | 0.07 | 0.15 | 0.05 | | 0.02 | 0.12 | 0.01 |

School C is the reference dummy

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

of the unique variance in internalizing problems, while building appearance and order and discipline each accounted for 1 % of the unique variance, above and beyond that explained by the other dimensions of school climate.

*Externalizing Problems*

The linear combination of the fixed effect of school, and the six dimensions of school climate, accounted for 17 % of the variance in externalizing problems ($F$ [8, 405] = 10.66, $p < 0.001$, $R^2 = 0.174$). Between-school differences accounted for 2.1 % of the variance, and the linear combination of students' perceptions of school climate dimensions accounted for the remaining 15.3 % of variance in students' externalizing symptoms. After controlling for variance shared among the predictors, peer interpersonal relations ($\beta = -0.29$) and parent involvement ($\beta = -0.09$) independently related to differences in externalizing problems. Peer interpersonal relations and parental involvement accounted for 3 and 1 %, respectively, of the unique variance in externalizing problems above and beyond that explained by the other dimensions of school climate.

*Life Satisfaction*

The linear combination of the fixed effect of school, and the six dimensions of school climate, accounted for 23 % of the variance in life satisfaction ($F$ [8, 406] = 15.50, $p < 0.001$, $R^2 = 0.234$). Between-school differences accounted for 1.3 % of the variance, and the linear combination of students' perceptions of school climate dimensions accounted for the remaining 22 % of variance in students' life satisfaction. After controlling for the variance shared among the predictors, peer interpersonal relations ($\beta = 0.26$) and parent involvement ($\beta = 0.23$) independently related to differences in life satisfaction. Peer interpersonal relations and parent involvement accounted for 3 and 5 %, respectively, of the unique variance in life satisfaction above and beyond that explained by the other dimensions of school climate.

Moderating Role of Gender

*Internalizing Problems*

When internalizing problems was employed as the criterion, and school as well as the main effects of gender and parent involvement were controlled for, a significant gender by parent involvement interaction was identified ($t = 2.27$, $p = 0.02$). No other significant interaction terms were yielded from the other five regressions that included interaction terms of gender by student–teacher relations, peer interpersonal relations, building appearance, sharing of resources, and order and discipline. In the regression equation for boys, the predictors accounted for 16.4 % of the variance in internalizing problems (with the six school climate dimensions accounting for 15.3 % of variance above and beyond the 1.1 % of variance attributable to between-school differences), and the unique effect of parent involvement was not significant ($\beta = -0.05$, $t = -0.65$, $p = 0.52$, $sr^2 = 0.002$). For girls, school climate accounted for 24.5 % of the variance in internalizing problems (with the six school climate dimensions accounting for 23 % of variance above and beyond the 1.5 % of variance attributable to between-school differences), and the unique effect of parent involvement was statistically significant ($\beta = -0.22$, $t = -3.68$, $p < 0.001$, $sr^2 = 0.04$), in the direction of higher levels of parent involvement predicting lower levels of internalizing problems.

*Externalizing Problems*

When externalizing problems was employed as the outcome variable, and school as well as the main effects of gender and parent involvement were controlled for, a significant gender by parent involvement interaction was identified ($t = 2.32$, $p = 0.02$). No other significant interaction terms were yielded from the five regressions that included interaction terms of gender by student–teacher relations, peer interpersonal relations, building appearance, sharing of resources, and order and discipline. In the regression equation for boys, school climate accounted for 17.9 % of the variance in externalizing problems (with the six school climate dimensions accounting for 12.8 % of variance above and beyond the 5.1 % of variance attributable to between-school differences), and the unique effect of parental involvement was not significant ($\beta = 0.02$, $t = 0.22$, $p = 0.83$, $sr^2 < 0.001$). For girls, school climate accounted for 19.6 % of the variance in externalizing problems (with the six school climate dimensions accounting for 17.9 % of variance above and beyond the 1.7 % of variance attributable to between-school differences), and the unique effect of parent involvement was statistically significant ($\beta = -0.18$, $t = -2.92$, $p = 0.004$, $sr^2 = 0.03$), in the direction of higher levels of parent involvement predicting lower levels of externalizing problems.

*Life Satisfaction*

When life satisfaction was employed as the outcome variable, and school as well as the main effects of gender and student–teacher relations were controlled for, a significant interaction between gender and student–teacher relations

was identified ($t = -2.28$, $p = 0.02$). No other significant interaction terms were yielded from the five regressions that included interaction terms of gender by peer interpersonal relations, parent involvement, building appearance, sharing of resources, and order and discipline. In the regression equation for boys, school climate accounted for 19 % of the variance in life satisfaction (with the six school climate dimensions accounting for 15.1 % of variance above and beyond the 3.9 % of variance attributable to between-school differences), and the unique effect of student–teacher relations was not significant ($\beta = 0.02$, $t = 0.21$, $p = 0.84$, $sr^2 < 0.001$). For girls, school climate accounted for 28.1 % of the variance in life satisfaction (with the six school climate dimensions accounting for 27.6 % of variance above and beyond the 0.5 % of variance attributable to between-school differences), and the unique effect of student–teacher relations was statistically significant ($\beta = 0.16$, $t = 2.21$, $p = 0.03$, $sr^2 = 0.01$), in the direction of more positive levels of student–teacher relations predicting higher levels of life satisfaction.

## Discussion

This cross-sectional study explored the associations between perceptions of school climate and mental health among high school students. A comprehensive definition of mental health guided the assessment of both positive and negative indicators. Results indicated that student perceptions of school climate are significantly associated with life satisfaction, as well as internalizing and externalizing forms of psychopathology, underscoring the links between perceived school context and adolescents' psychological functioning. Life satisfaction was the indicator of mental health most strongly associated with school climate perceptions. Of the six dimensions of school climate considered (i.e., sharing of resources, order and discipline, parent involvement, school building appearance, student interpersonal relations, and student–teacher relations), parent involvement demonstrated the most consistent associations with student mental health (particularly for girls). Further, students' perceptions of peer interpersonal relations were linked with both life satisfaction and externalizing psychopathology, whereas teacher–student relations were particularly associated with wellness (among girls only). Weak (but unique) associations between students' perceptions of the physical appearance of the building, the equality with which school resources are shared, and their internalizing symptoms were observed among the combined/total sample. Regarding the moderating role of gender, school climate evidenced stronger links with psychological functioning among girls than boys, accounting for 5–12 % more variance in indicators of girls' mental health.

Previous studies of relationships between school climate and adolescents' mental health have primarily focused on psychopathology. The inverse bivariate relationships between all six dimensions of school climate and mental health problems found in the current study are consistent with findings from prior studies that linked increased psychopathology to worse student perceptions of teacher–student relations (Kasen et al., 1990), peer relations (Loukas et al. 2006), and parent–child connectedness and behavioral involvement (Day & Padilla-Walker, 2009). The current study shows that greater internalizing and externalizing problems are also associated with additional aspects of school climate, namely perceptions of less equality in access to school resources, less order and discipline, and worse school building appearance. Whereas prior research has focused on social and familial relationships, this study indicates that structural and physical aspects of school climate are also linked to psychopathology.

The current study is unique in its use of a comprehensive definition of student mental health. Results suggest that perceived school climate is slightly more associated with students' wellness than their psychopathology. Previous research is very limited in regard to the relationship between school climate and wellness indicators, such as life satisfaction. The current findings elucidate the potential importance of environmental influence, such as school climate, on adolescents' happiness. A previous study of high school students that utilized the same definition of school climate as in the current study found that 14 % of the variance in students' life satisfaction was explained by school climate perceptions (Suldo et al., 2008). Findings from the current study suggest that an even greater amount (22 %) of the variance in high school students' life satisfaction may be attributable to school climate perceptions. Consistent with prior research that found life satisfaction is inversely associated with chronically stressful peer relationships (Ash & Huebner, 2001) and linked in a positive direction to parent support (Suldo & Huebner, 2004), positive peer interpersonal relationships and parent involvement emerged as the dimensions of school climate that drove the effect. Among girls, life satisfaction was also associated with greater perceptions of student–teacher relations. Prior research with middle school students found teacher support to be moderately linked to subjective well-being among both genders (Suldo et al., 2009).

The current study adds to the mixed bag of findings from prior research that suggested some dimensions of school climate matter more to boys or girls. The current study found the main effects of parental involvement on psychopathology were moderated by gender, such that perceived parent involvement was unrelated to boys' mental health problems but a significant inverse correlate of female high school students' internalizing and

externalizing symptoms. Other parenting factors, such as parent support, have also shown stronger associations with female adolescents' problem behaviors compared to males' (Aalsma, Liu, & Wiehe, 2011). Prior research also found stronger associations among girls between psychopathology and other social relationships that can be considered dimensions of school climate, namely student–teacher relations (Crosnoe et al., 2002) and peer relationships (Loukas & Robinson, 2004). Specifically, in a study of high school students, teacher–student bonding was more linked to girls externalizing problems. Contrary to hypotheses, Crosnoe et al. (2002) found parent involvement to be *problematic* for boys involved in a peer group that used drugs, possibly because a close parent–child relationship may have led to more permissive parenting, which could increase the risk for involvement in substance use with peers. In a younger sample of middle school students, perceived friction with classmates was significantly related to girls' conduct problems and self-reported symptoms of depression (Loukas & Robinson, 2004). The current study found an indicator of psychological functioning (life satisfaction) to be more closely tied to perceived teacher–student relations among high school girls. Findings across studies suggest that adolescent girls may be particularly sensitive to mental health problems co-occurring with negative perceptions of the socially oriented dimensions of school climate. Previous studies that found particular risk factors for boys involved aspects of school climate (e.g., excessive competition among students; Loukas & Robinson, 2004) that were not included in the current definition of school climate. Further research using comprehensive definitions of mental health and school climate are needed in order to fully understand the unique influences of types of school climate on different genders' positive and negative indicators of psychological functioning.

Between-school differences in school climate were also examined in the current study in order to illustrate the great variability in individual students' perceptions of school climate, including among students attending the same school. Mean perceptions of half the school climate dimensions (parent involvement, student–teacher relations, and sharing of resources) varied little between the three schools. School-level differences in the remaining three dimensions ranged from explaining 7.5 (school building appearance) to 18 % (peer interpersonal relations, order and discipline) of variance in students' perceptions of school climate. These findings are consistent with those of Fan et al. (2011), whose multi-level analysis of the school climate perceptions of 16,168 10th-grade students from 757 high schools indicated that school-level differences accounted for 13–20 % of the variance in students' perceptions of (a) order, safety, and discipline, (b) teacher–student relationship, and (c) fairness and clarity of school rules, such that the remaining 80–87 % of the variance for each school climate outcome was explained by between-student variation.

## Implications of Findings

This study's findings underscore the relevance of school climate perceptions to students' mental health. Considered along with prior longitudinal studies that established school climate perceptions predict later mental health (Kasen et al., 2009; Loukas & Murphy, 2007), the rationale for attempting to foster a positive school climate appears sound. Given its potential impact at a school-wide level and amenability to change, school climate is an ideal target for school mental health professionals seeking to promote students' wellness and decrease pathology. Although the current cross-sectional study did not test the efficacy of strategies to improve school climate, the literature contains guidance for educators who desire to move in that direction.

For example, Lehr and Christenson (2002) suggest utilizing cooperative learning strategies and student cross-grade level partnerships to promote positive student relations. Bullying prevention programs are also critical to this aim (Espelage & Swearer, 2003). To promote parent involvement, Esler et al. (2008) recommend schools: recognize that parent involvement involves more than being physically present in the school setting, make it a priority to include parents in decision-making processes, and show appreciation when parents are involved. Regarding fostering parent–student relations, middle school students describe perceiving several specific teacher behaviors to convey support: attempting to connect with students on an emotional level, using diverse and best practice strategies, acknowledging students' academic success, demonstrating fairness, and encouraging student questions (Suldo et al., 2009). Sharing such insights with educators can be useful when targeting student–teacher relations. To promote order and discipline at the school, rules should be consistent and fair across settings, students must know the rules as well as the consequences for following or not following those rules, and students should be included in the development of school policies (Barbarasch & Elias, 2009; Bear, 2008). Simple awareness of the fact that students' perceptions of building appearance and equal sharing of resources matter in terms of their psychological functioning may encourage school administration to take feasible actions within the school's means to improve these physical and structural dimensions of school climate.

## Limitations and Directions for Future Research

Findings from the current study are tempered by limitations in the study design, including use of a convenience sample with a low participation rate, a small number of schools that

precluded the use of multi-level modeling, sole reliance on student reports of school climate and mental health, and a cross-sectional data collection. Replication with a more diverse and purposefully sampled group of students from a large number of schools would help improve trustworthiness of findings, and extend the generalizability. In the current study, the finite number of schools from which students were drawn necessitated use of a fixed-effect approach during data analyses, a strategy that limits the generalizability of findings to the three participating schools. Greater inferences would be yielded from a design in which students are recruited from a large number of schools (in general, above 30; Hox, 2010), with school considered as a random factor in a multi-level model. Given that students' perceptions of school climate are influenced by their experiences outside of their current environment (e.g., social and academic risk factors, as well as demographic characteristics; Fan et al., 2011), future studies should also consider exploring school climate with the use of more potentially objective assessments (e.g., behavioral observations; parent and teacher reports of school climate) in part to provide external validation of the youth self-report data. Regarding more observable indicators of student mental health, teacher and parent behavior ratings of externalizing behaviors such as aggressive and rule-breaking acts would help triangulate youth self-reports. The current reliance on youth self-report data to assess all constructs is subject to many biases, including the possibility that adolescents with diminished mental health may have falsely negative perceptions of their school climate. In a similar vein, longitudinal research is needed to confirm the hypothesized direction of relationships assumed in the current study, as well as to determine the impact of school climate-enhancing interventions on student mental health. For example, rather than school climate influencing students' wellness and psychopathology, the reverse situation may be true such that students with poor mental health are more likely to develop negative perceptions of their school climate (in addition to other environmental contexts).

Despite these limitations, findings from the current study advance the literature by documenting that students with greater life satisfaction and reduced psychopathology perceive a more positive school climate. Such results suggest that efforts to foster a positive school climate may serve as a universal, tier I strategy for promoting mental wellness, particularly among girls.

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