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Perceptions of the School Psychological Environment and Early Adolescents' Psychological and Behavioral Functioning in School: The Mediating Role of Goals and Belonging

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In a sample of 296 8th-grade middle school students, the authors examined the role of personal achievement goals and feelings of school belonging in mediating the relation between perceptions of the school psychological environment and school-related beliefs, affect, and achievement. Sequential regression analyses indicated that perceiving a task goal structure in middle school was positively related to academic self-efficacy and that this relation was mediated through personal task goals. Perceiving an ability goal structure was related to academic self-consciousness and this relation was mediated through personal relative ability goals. Perceiving positive teacher–student relationships predicted positive school-related affect and this relation was mediated through feelings of school belonging. Feelings of academic efficacy and school belonging in turn were positively related to final-semester academic grades. Results are discussed in relation to current middle school reform efforts.

During the early adolescent years, middle schools play an important role in facilitating or inhibiting successful adolescent development (Carnegie Council on Adolescent Development, 1989). Schools potentially can provide early adolescents with opportunities to develop their intellectual capacities, to experience a sense of competence and belonging, and to interact with supportive, nonparental adults. Unfortunately, just when adolescents are particularly in need of these opportunities, the middle-school learning environment often fails to provide them (Carnegie Council on Adolescent Development, 1989; Eccles & Midgley, 1989). For instance, at a time when adolescents are known to be sensitive about how they appear to others, middle schools emphasize relative ability and social comparison in learning situations (Midgley, Anderman, & Hicks, 1995); and at a time when adolescents are particularly in need of supportive relationships with adults outside the home, the quality of relationships with teachers is less than optimal (Midgley, Feldlaufer, & Eccles, 1989). Understanding how particular aspects of the middle-school environment relate to both adaptive and maladaptive patterns of academic motivation and achievement has become an increasingly important topic in the field of educational psychology (Eccles, Wigfield, et al., 1993; Maehr & Anderman, 1993; Midgley, 1993; Urdan, Midgley, & Wood, 1995). At a time when middle schools are being scrutinized and recommendations for reform are being suggested, research in this area assumes a particularly useful role.

The current article is part of the growing number of studies that seek to understand the association between adolescents' school experiences and their academic motivation and behavior during a developmental period characterized by normative declines in several indicators of school adjustment (e.g., Eccles, Midgley, et al., 1993; Harter, Whitesell, & Kowalski, 1992; Midgley, Anderman, & Hicks, 1995). For instance, there is evidence that perceptions of academic competence, academic values, and course grades grow more negative (Eccles & Midgley, 1989) and that school-related worries and concerns increase during the early adolescent period (McGuire, Mitic, & Neumann, 1987). Although school adjustment and achievement are important for adolescents' continued engagement with school, general well-being, and future opportunities (e.g., Eccles, Lord, & Roeser, 1996), few studies have addressed how different aspects of the middle school environment relate to motivation and achievement during these years. In this study, we focus on how early adolescents' perceptions of the goals for learning which are emphasized in their school (task mastery vs. ability relative to others), and their perceptions of teacher–student relationships relate to their beliefs about their academic efficacy, affect toward school, and academic achievement during eighth grade. Attention is

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focused not only on understanding how these two aspects of the perceived school environment differentially relate to these academic outcomes, but also to the processes that link perceptions of the school environment with such outcomes.

Within educational psychology, social–cognitive views of motivation that emphasize how students derive meaning from their experiences in achievement settings have gained increasing prominence (Ames, 1992a; Deci & Ryan, 1985; Eccles, 1983; Maehr & Midgley, 1991; Weiner, 1980). In one line of research, achievement goal theorists have focused on aspects of the learning environment that relate to the goals students adopt in a given academic setting as they strive for competency (e.g., Ames, 1992b; Maehr, 1991; Maehr & Midgley, 1991). Another line of work has highlighted the relations between aspects of the learning environment and students' sense of relatedness and community in school (e.g., Battistich, Solomon, Kim, Watson, & Schaps, 1995; Connell, 1990; Eccles & Midgley, 1989; Goodenow, 1993a). In our view, these two bodies of work have much in common in that we believe early adolescents actively attempt to make meaning of their middle school experiences in terms of their needs for competence and relatedness (Deci & Ryan, 1985). In particular, we theorize that students attend to school norms concerning how successful learning is defined and also to the way that principals, teachers, and other professionals in the school interact with and relate to students. These perceptions of the school environment in turn are thought to shape students' own school-related beliefs, affect, and behavior.

In this study, we draw upon constructs from these two strands of research on students' experience in school and their beliefs and behavior. First, we build on research that takes an achievement goal perspective to understanding the quality of students' achievement strivings (Ames, 1992b; Dweck & Leggett, 1988; Maehr & Midgley, 1991; Nicholls, 1984). Second, we use constructs from research that has focused on the associations among teacher–student relationships, feelings of belonging in school, and adolescents' academic motivation and behavior (e.g., Connell, 1990; Goodenow, 1993a, 1993b; Moos, 1979). A primary purpose of this study is to bridge these two bodies of work by examining the processes by which both the goal and relationship dimensions of the perceived school context relate to adolescents' psychological functioning and achievement during middle school.

Figure 1 presents the model and constructs examined in this study. First, we theorize that students' perceptions of the goals emphasized in their middle school environment relate to the personal achievement goals they adopt in achievement settings. Similarly, we theorize that students' perceptions of the quality of teacher–student relationships in their school relate to feelings of belonging in school. Students' personal achievement goals and feelings of school belonging in turn are examined in relation to psychological outcomes associated with school such as feelings of academic efficacy and affective reactions in school. In the last step of the model, the association of students' feelings of academic efficacy and affective reactions to school with their final semester academic achievement is examined. In looking at each set of these relations, we use statistical controls for characteristics with which students' enter eighth grade, including their achievement history, prior achievement goals, race, socioeconomic status, and gender (Andersen, 1982).

Although the causal direction of the relations among these constructs is not yet well established, the hypothesized direction from the perceived school context measures to achievement goals and feelings of belonging follows from

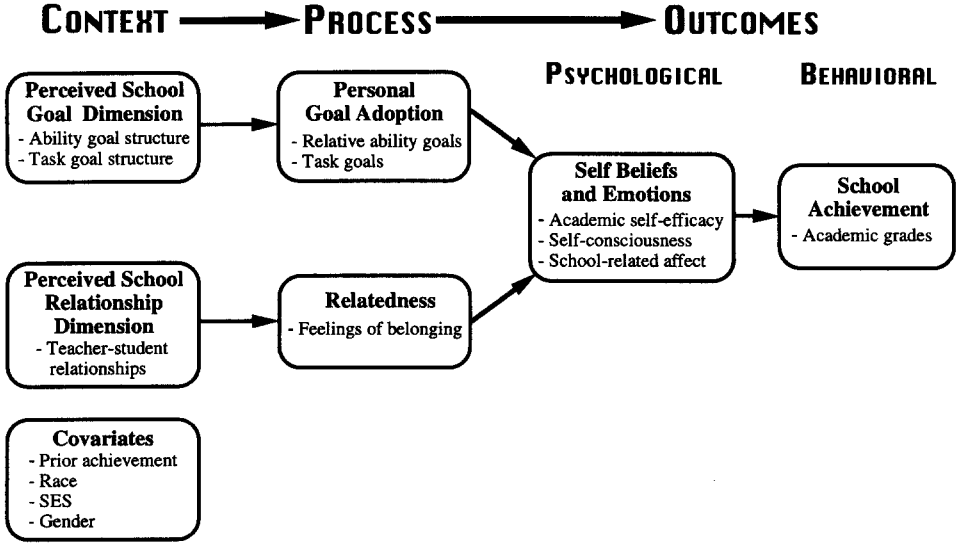


Figure 1. Theoretical model and constructs of eighth graders' school perceptions, psychological processes, and school outcomes. SES = socioeconomic status.

previous empirical research in classrooms and schools (Goodenow, 1993a; Midgley, Anderman, & Hicks, 1995; Nolen & Haladyna, 1990; Roeser, Aberbach, & Anderman, 1993). The hypothesized direction from achievement goals and feelings of belonging to psychological and behavioral outcomes is similar to other ecological models of achievement motivation (Anderman & Maehr, 1994; Connell, Spencer, & Aber, 1994; Eccles, 1983; Maehr, 1991). Similar to these other models, we acknowledge that reciprocal causation among several of these constructs may occur over time (e.g., goals and self-efficacy, self-efficacy and achievement). In this study, we examine the flow among the constructs depicted in Figure 1 at one point in time based upon theoretical considerations, prior research, and the use of relevant statistical controls, all of which are discussed below.

School Psychological Environment

To understand the relation between middle school experiences and students' psychological and behavioral functioning in school, we focus on what we call "the school psychological environment" or what others have referred to as the "school ethos" (e.g., Good & Weinstein, 1986; Rutter, 1983), the "school culture" (Maehr, 1991), or the "school climate" (Andersen, 1982). We use the term *psychological environment* to emphasize that it is the meaning of the environment to the individual that is being considered here. In this case, it is students' perceptions of the school environment and their reaction to those perceptions that are of importance (Maehr, 1991).

Two dimensions of the school psychological environment, the "goal dimension" and the "relationship dimension" are considered in this study. First, there is increasing evidence that the achievement goal structures that students perceive both in the classroom and in the school as a whole are related to their self-perceptions, use of effective learning strategies, effort, and persistence (e.g., Ames, 1992a; Ames & Archer, 1988; Maehr & Fyans, 1989; Midgley, Anderman, & Hicks, 1995). Second, research on the interpersonal aspects of the middle school environment has demonstrated that positive teacher–student relationships in school are related to early adolescents' academic motivation and achievement (e.g., Goodenow, 1993a; Midgley et al., 1989).

Goal Dimension: Perceived Academic Goal Structures

Theoretical and empirical work by Ames, Maehr, Midgley, and their colleagues has demonstrated that constellations of educational practices and policies in classrooms and schools give rise to certain meanings or goals that define what constitutes success (see Ames, 1992a, 1992b; Maehr & Midgley, 1991; Midgley, 1993). Although much of the research on academic goal structures has focused on the classroom level (see Ames, 1992b), Maehr and Midgley (1991) have argued that goal structures can also be perceived at the school level and are conveyed through the school-level policies and practices that students experience on a regular basis. For instance, public honor rolls or assemblies for the highest achieving students, the use of homogeneous ability grouping, special privileges based upon academic standing, and separate report card marks for achievement and effort may all provide important messages about what constitutes success in a given school (see Maehr & Anderman, 1993; Maehr & Midgley, 1991; Midgley, 1993, for extended discussions). One of the primary demands placed upon students within the school setting is the pursuit of academic success and thereby a sense of personal competence and worth (e.g., Covington, 1992). Thus, the implicit and explicit meanings of success that students perceive at school may relate to their own achievement beliefs, feelings, and behaviors. For instance, evidence from laboratory studies (Dweck & Leggett, 1988) and from an intervention project in elementary school classrooms (Ames, 1990) suggests that changes in the goal context are related to changes in students' approach to learning. We believe similar processes operate at the school level and posit that perceptions of the goal structures in school are important antecedents to students' own achievement goals (Maehr & Midgley, 1991).

Two types of school-level goal structures have proven to be helpful in understanding how students construct meaning about what constitutes successful achievement in school. Schools, through their policies and practices, can emphasize improvement, mastery, and intellectual development *(task mastery goals)*, or social comparison, relative ability, and competition among students *(relative ability goals)*. Although relatively few studies have been conducted to date, there is evidence that students' perceptions of the goals emphasized in the school as a whole are related to their personal achievement goals, feelings of academic efficacy, use of effective learning strategies, and in-school behavior. Specifically, perceiving that the school environment emphasizes personal improvement and task mastery is related to personal task goals, use of higher level cognitive strategies, academic self-efficacy, and positive in-school behavior, whereas perceiving that the school environment emphasizes the demonstration of ability relative to others is related to less positive patterns of learning and views of self (personal relative ability goals, use of surface-level cognitive strategies, low self-efficacy, increased incidence of disciplinary problems; Maehr & Fyans, 1989; Midgley, Anderman, & Hicks, 1995; Urdan & Roeser, 1993).

Although research on the relation between perceived school goal structures and cognitive and behavioral variables is growing, virtually no school-based research to date has looked at how perceived school goal structures relate to students' feelings of academic self-consciousness or school-related affect. Achievement goal theorists have long suggested that school settings that are competitive and ability-focused are likely to promote feelings of frustration, disaffection, and self-consciousness for many students, whereas settings that emphasize task mastery and improvement may relate to diminished self-consciousness during learning (e.g., Ames, 1984, 1992a; Covington, 1992). Despite these theoretical predictions and the demonstration of

the links between personal achievement goals and affect in the laboratory (Dweck & Leggett, 1988), empirical studies of these relationships in actual school settings have yet to be undertaken.

In the current study, we test several hypotheses concerning the relations between students' perceptions of school goal structures and their psychological functioning in school (see Figure 1) and whether personal goals mediate the relation of these perceptions to psychological outcomes. First, we hypothesize that perceptions of a school ability goal structure and a school task goal structure will predict students' personal ability and task goals, respectively. Second, we hypothesize that perceiving an ability goal structure in the school will be positively related to feelings of academic self-consciousness and that this relation will be mediated through students' personal relative ability goals. Third, we hypothesize that perceiving a task goal structure in the school will be positively related to academic self-efficacy (e.g., Midgley, Anderman, & Hicks, 1995) and negatively related to academic self-consciousness with these relations mediated through students' personal task goals for learning. Each of these relations are hypothesized to exist above and beyond any influence of students' prior (sixth-grade) achievement goals.

Relationship Dimension: Perceived Teacher–Student Relationships

The second strand of research upon which this study builds is concerned with how schools can play an important role in providing a supportive, caring community within which learning and mental health can thrive (Carnegie Council on Adolescent Development, 1989). Whereas academic goal structures in the school are thought to relate to students' construction of the meaning of success, and hence, the achievement goals they adopt, social aspects of the school environment have been conceptualized as relating to feelings of school belonging and commitment (see Goodenow, 1992; Moos, 1979). Empirical studies have shown that perceptions of positive teacher–student relationships and feelings of school belonging both relate to positive academic motivation and achievement (Goodenow, 1993a; Midgley et al., 1989; Moos, 1979). Furthermore, Boekaerts (1993) has suggested that supportive academic settings may be perceived by students as extensions of their personal resources, and may thus serve to reduce anxiety and negative affect that can arise in achievement settings.

The possibility that feelings of belonging mediate the relation between perceptions of the school environment and students' self-efficacy beliefs, school-related affect, and self-consciousness is largely unexplored (e.g., Goodenow, 1993b). Just as students' perceptions of the goals that are promoted in their school can affect their personal goal orientations, we hypothesize that their perceptions of the quality of teacher–student relationships are related to their personal feelings of belonging in school, which in turn relate to psychological and behavioral functioning in school. Specifically, we predict that students who perceive positive teacher–student relationships in school characterized by respect, supportiveness, and care will report a greater sense of school belonging. Positive feelings of school belonging, in turn, are hypothesized to predict increased positive feelings toward school and decreased self-consciousness in learning situations. We test whether feelings of school belonging mediate these relations between teacher–student relationships and these affective outcomes.

Predicting Achievement

In the final step of the model in Figure 1, we hypothesize that students' academic efficacy beliefs, school-related affect, and academic self-consciousness will predict their end-of-the-year achievement. Other research has documented positive relations between middle school students' academic self-efficacy and academic performance as measured by grades and we expect to replicate these findings with this sample of eighth graders (Pintrich & De Groot, 1990). Academic self-consciousness is conceptualized as operating similar to test anxiety in that higher levels of academic self-consciousness can have a debilitating influence on school-related self-perceptions and performance (Elias, 1989; Yee & Flanagan, 1985). For instance, self-consciousness in academic situations may be associated with an impaired ability to concentrate, a fear of taking academic risks, and refusals to speak publicly in classes, all of which potentially could lead to lower performance. Finally, similar to research that has shown that positive attitudes toward school relate positively to achievement (Moos, 1979), we predict that positive affect in school will also be related to higher grades.

Role of Student Entry Characteristics

Previous school environment studies have documented the role that students' entry characteristics can play in shaping their subsequent perceptions of the school environment and subsequent school-related outcomes (see Andersen, 1982). Here we were concerned with whether students' perceptions of their school in the eighth grade, especially their perceptions of the school goal structures, were related to their prior goal orientation. We also were interested in examining the relations in Figure 1 above and beyond any influence that could be attributed to students' prior goal orientation. To address these issues, we first examined the relation of students' sixth-grade goal orientation to their eighth-grade school perceptions. Second, we partialled out the influence of these prior beliefs in assessing the relations in Figure 1. In addition, we included measures of gender, race, and participation in the school lunch program to address mean level differences in several of our outcome measures that could be attributed to these other entry characteristics of students.

Summary

In summary, this study adds to existing research in the following ways: First, we bring together two separate

strands of research on the relations between the perceived school environment and students' beliefs, emotions, and achievement. That is, we incorporate research on both the perceived goal structure and the quality of teacher–student relationships in school. Second, we test a set of mediated relations to determine whether personal achievement goals mediate the relation between perceptions of the school goal structure and psychological outcomes and whether personal feelings of belonging in school mediate the relation between perceived teacher–student relationships in the school and psychological outcomes. Third, we broaden the range of outcome variables that have been considered in research adopting an achievement goal perspective by examining affective variables in addition to academic self-efficacy and achievement. Fourth, we take account of students' prior motivational beliefs and achievement history in considering these relationships during adolescents' eighth-grade school year.

Method

Sample

The students who participated in this study were attending two middle schools that served all the sixth, seventh, and eighth graders in one school district. The school district is located near a major metropolitan area in a community that can be characterized as primarily White and working class. Census statistics (1990) indicated a median family income of about $40,000, with approximately 6% of the families living in poverty. Eighty percent of the community residents sampled had completed high school and about 15% had a bachelor's degree or higher. The sample consisted of 296 students. Approximately equal numbers of girls (n = 147, 49.6%) and boys (n = 149, 50.4%) participated in the study. The sample was 87% White and 13% African American, reflecting the racial composition of the surrounding communities. Ten percent of the students in this study received free or reduced-fee lunches in school, based on level of family income. In order for students to participate in the study, parental permission was required. Seventy-nine percent of the students in the two schools received permission. Data were collected when the students were in the sixth and eighth grades (spring 1991 and spring 1993).

One of the two middle schools in this study was participating in a collaborative restructuring project with researchers at the University of Michigan (Maehr & Midgley, in press). The sixth-grade measures included in this study were collected prior to the beginning of the collaborative project. Reform efforts in the school participating in the collaborative project did not include the eighth-grade level until the year following the collection of the eighth-grade data. t Tests assessing mean differences in students' perceptions of the school context at the eighth-grade level revealed no differences between the two schools.

Surveys were administered to students during one class period (of approximately 40 min) each year and were read aloud by trained research assistants. Students were given instructions in the use of Likert-type scales and were encouraged to ask questions during survey administration if anything was unclear. Participants were assured that the information they provided would be confidential, and surveys were removed from the school sites after the students had completed them.

Measures

The measures used in this study were selected to assess the four sets of constructs depicted in Figure 1, including perceptions of the school environment, mediating processes, and psychological and behavioral outcomes. Principal component factor analytic methods were used to differentiate scales within each of these four hypothesized levels of constructs (Kim & Mueller, 1978). Scales, items, and reliability coefficients for the school context perceptions, personal achievement goals, school belonging, and academic self-efficacy measures are presented in the Appendix. These measures were taken from the Patterns of Adaptive Learning Survey (PALS) developed at the University of Michigan over the last 5 years (Midgley et al., 1996; see Maehr & Midgley, in press; Midgley, Maehr, et al., 1995). These scales and others used in this study are summarized below.

School context perceptions. Three scales were used to measure students' perceptions of the school psychological environment, two reflecting the goal dimension and one reflecting the relationship dimension. Items for all three of these scales were drawn from PALS, and were measured on 5-point Likert scales (1 = *not at all true in this school,* 5 = *very true in this school*). Principal component factor analysis was used on the full set of items measuring students' school perceptions, and the three hypothesized scales emerged. The Perceived Task and Ability Goal Structure Scales were negatively correlated ($r = -.45$, $p \leq .01$), whereas the perceived teacher–student relationship scale was positively correlated with the Task Goal Structure Scale ($r = .70$, $p \leq .01$), and negatively with the perceived School Ability Goal Structure Scale ($r = -.53$, $p \leq .01$). Although these correlations are high, an examination of the tolerances of these variables in the multivariate analyses described below showed that no assumptions concerning multicollinearity were violated (Berry & Feldman, 1985).

The scale measuring student perceptions of a school-task goal structure consisted of six items, and had an alpha coefficient of .81. Items in this scale assessed students' perceptions of an emphasis in the school on effort, understanding, and the belief that all students can learn and be successful. The scale measuring perceptions of a school-ability goal structure consisted of 5 items (α = .80) and included items tapping student perceptions that relative ability is a salient and rewarded marker of success in the school, and that higher achieving students are treated better than other students. The teacher–student relationship scale was composed of 5 items (α = .81) and tapped student perceptions of the quality of teacher–student interactions in school.

Process measures. Three scales, also taken from PALS, were used to measure the processes that were hypothesized to mediate the relation between school perceptions and students' psychological and behavioral functioning in school. These included students' personal task and relative ability goal orientation and their feelings of belonging in school. All of the items for these constructs were assessed on 5-point Likert scales (1 = *not at all true of me,* 5 = *very true of me*) and were factor analyzed together. The three hypothesized scales emerged from the factor analysis. The personal task goal and ability goal measures were positively correlated ($r = .14$, $p \leq .05$), whereas school belonging was positively correlated with personal task goals ($r = .47$, $p \leq .05$) and was unrelated to personal relative ability goals ($r = .09$, *ns*). The scale assessing students' personal task goals included 5 items (α = .81) and assessed students' preferences for challenging work, task mastery and understanding, and learning new things. The scale measuring personal relative ability goals consisted of 6 items (α =

.84) and included items that assessed students' desire to demonstrate their ability relative to others and to be recognized by their teachers and parents for their ability relative to others. The scale measuring feelings of belonging in school consisted of 4 items (α = .76) that assessed whether students felt that they were important, that they mattered, and that they belonged in their middle school. Although early adolescents experience several different classroom environments during a typical middle-school day, this study was concerned with the psychological environment in the school as a whole. Thus, we purposely used generalized school-level measures rather than domain-specific or classroom-specific measures to assess students' orientation to task goals, relative ability goals, and their feelings of belonging in school.

Psychological outcomes. Students' academic self-efficacy, academic self-consciousness, and general affective experience in school were included as psychological outcomes related to school. The Academic Self-Efficacy Scale came from PALS, was composed of six items (α = .86), and assessed students' beliefs that they could master the material and skills taught in school if they were given enough time and exerted enough effort. Items were assessed on a 5-point scale (1 = *not at all true of me,* 5 = *very true of me*). For the set of items that tapped students' school-related affect and self-consciousness, factor analysis was used to derive scales. Two scales emerged, including positive school affect (three items, α = .81) and academic self-consciousness (four items, α = .73). All of these items were measured by a 5-point Likert scale (1 = *not at all true of me,* 5 = *very true of me*). The Positive Affect Scale was developed by Wolters, Garcia, and Pintrich (1992) and assessed the general valence of students' emotional experience while in school. Items for the Positive Affect Scale included "I like being at school," "Most of the time, being in school puts me in a good mood," and "I am happier at school than when I am not at school." The academic self-consciousness items were taken from Eccles' (see Eccles, Midgley, et al., 1993) Junior High School Transition Study. Items on this scale included "I am afraid to make mistakes in front of others in my classes," "I feel nervous about performing in front of others or making a presentation," and "I am easily embarrassed in school." The Positive School Affect and Academic Self-Consciousness Scales were uncorrelated (r = .04, *ns*).

Achievement. A measure of academic achievement was taken from students' school records. Grade point average (GPA) from the final semester of students' eighth-grade year was computed by averaging grades in the core academic subjects (English, math, science, social studies). This scale ranged from 1 (*E = failing*) to 13 (*A+*).

Student entry characteristics. We also included measures of students' entry characteristics, including prior achievement goals, gender, ethnicity, free lunch status, and sixth-grade achievement (hereafter referred to as *statistical controls*). These variables were included in all analyses to account for statistically significant differences between groups on several of the process and outcome measures.[1] Students' academic grades from sixth grade were taken from school records. A measure of prior academic performance was created by averaging year-end grades in math, English, science, and social studies. This achievement measure also ranged from 1 to 13 (*E* to *A+*). Prior achievement goals were assessed on surveys administered to students during their sixth-grade year. Similar to the eighth-grade goal measures, these scales consisted of 5-point Likert items, included slightly fewer items than the eighth-grade measures, and were reliable. The sixth-grade goal measures are also presented in the Appendix.

Results

Bivariate Relations

Summary statistics and correlations among all of the measures are presented in Table 1. The bivariate relations among the school perceptions, personal achievement goals and feelings of school belonging, and psychological and achievement outcomes exhibited a predictable pattern of results. Of particular interest in this study were the correlations between perceptions of the school psychological environment and the other measures. Perceiving an emphasis on mastery and improvement in the school (school-task goal structure) was significantly positively related to students' adoption of personal task goals, feelings of school belonging, academic self-efficacy, positive school affect, and final semester GPA. The same pattern of correlations emerged for perceptions of the quality of teacher–student relationships. In contrast, perceiving an emphasis on relative ability and competition in school (school-ability goal structure) was significantly positively correlated with students' adoption of personal relative ability goals and negatively correlated with feelings of school belonging, positive affect in school, and final semester GPA in eighth grade.

Role of Prior Achievement Goal Beliefs

To examine whether students' prior achievement goals influenced their perceptions of the school environment during eighth grade, we regressed each of the school perception variables on the prior goal measures. Results showed that students' sixth-grade personal task goals had a moderate positive effect on subsequent perceptions of a school-task goal structure (β = .27, $p \leq .01$) and on perceptions of the quality of teacher–student relationships (β = .27, $p \leq .01$) and a negative predictive effect on perceptions of a school-ability goal structure (β = −.22, $p \leq .01$) during eighth grade. Sixth-grade relative ability goals had a small positive effect on perceptions of a school-ability goal structure during eighth grade (β = .14, $p \leq .05$). The sixth-grade personal achievement goals accounted for only a small amount of the variance in students' school environment perceptions at the eighth-grade level (adjusted r^2 = .05–.07).

These regressions indicated that prior goals were modest predictors of subsequent perceptions of the school environ-

[1] t Tests revealed the following significant differences: Boys endorsed ability goals more strongly than did girls at both the sixth and eighth grades (t [281] = −2.25, $p \leq .05$; t [294] = −3.15, $p \leq .01$); girls perceived the school as more task-oriented than did boys (t [284] = 2.61, $p \leq .01$). African American students had more positive feelings of academic efficacy (t [294] = 2.56, $p \leq .01$), lower feelings of academic self-consciousness (t [294] = −2.01, $p \leq .05$), lower prior achievement (t [291] = −2.02, $p \leq .01$), and lower eighth-grade grade point average (GPA; (t [279] = −2.21, $p \leq .05$) than their White peers. School lunch program participants had lower prior achievement scores (t [283] = −4.56, $p \leq .01$) and eighth-grade GPAs (t [279] = −3.85, $p \leq .01$) than those students who did not participate in this program.

Table 1
Summary Statistics and Bivariate Correlations for Student Entry Characteristics, School Environment Perceptions, Process Measures, and Outcomes

Variable	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Personal relative ability goals	T1	—															
2. Personal relative ability goals	T2	.39**	—														
3. Personal task goals	T1	.28**	.19**	—													
4. Personal task goals	T2	.11	.14*	.38**	—												
5. Feelings of school belonging	T2	.05	.09	.14*	.46**	—											
6. Academic self-efficacy	T2	.07	.19**	.22**	.63**	.52**	—										
7. Academic self-consciousness	T2	.14*	.41**	.23**	−.01	−.17**	−.04	—									
8. Positive school affect	T2	.07	.08	.25**	.46**	.45**	.33**	.04	—								
9. End-of-the-year sixth-grade GPA	T1	.04	.15*	.10	.27**	.30**	.37**	.08	.18**	—							
10. Second semester eighth-grade GPA	T2	.06	.17**	.13*	.34**	.38**	.42**	.03	.18**	.72**	—						
11. School-ability goal structure	T2	.08	.33**	−.19**	−.23**	−.17**	−.09	.10	−.16*	−.06	−.13*	—					
12. School-task goal structure	T2	.07	.02	.26**	.48**	.35**	.37**	.11	.32**	.14*	.19**	−.45**	—				
13. Teacher–student relationships	T2	.09	−.02	.28**	.39**	.35**	.28**	.09	.35**	.10	.19**	−.53**	.70**	—			
14. Gender	T2	.13*	.19**	.01	−.08	.05	.06	−.09	−.11	−.15*	−.11	.12	−.14*	−.11	—		
15. Race	T2	.03	.00	.01	.00	−.04	−.11	.12	.01	.15*	.16*	.00	−.07	.01	−.05	—	
16. School lunch program (SES)	T2	−.02	.05	.07	.05	.04	.06	.03	.01	.25**	.21**	−.02	.04	−.01	.01	.09	—
M		3.08	2.90	3.31	3.18	3.48	3.72	2.90	2.79	8.10	7.95	2.83	3.55	3.11	0.51	0.87	0.88
SD		1.08	0.93	0.80	0.83	0.86	0.81	0.97	1.00	2.41	2.94	0.92	0.79	0.80	0.50	0.33	0.32

Note. $N = 241$, due to missing data and listwise deletion of cases for analyses. Gender is coded 0 = *Females,* 1 = *Males;* race is coded 0 = *African American,* 1 = *White;* School lunch program is used as an index of socioeconomic status (SES) and is coded 0 = *Participation,* 1 = *No participation.* GPA = grade point average. Time refers to time of variable measurement, with "T1" referring to measures from the sixth grade, and "T2" referring to measures from the eighth grade.
* $p \leq .05$. ** $p \leq .01$.

ment. We wanted to understand the pattern of relationships among the constructs in Figure 1 independent of students' prior goal beliefs. Therefore, each of the school perception, mediating process, and outcome measures was regressed on the prior goal measures, and residual scores from these regressions were used in the subsequent analyses. Partialing out the variance due to students' prior achievement goal beliefs in both the eighth-grade predictor and outcome measures allowed us to examine the multivariate relations among these measures net of the influence of prior goals (Pedhazur, 1982). For the goal measures, prior task and relative ability goals predicted 14% of the variance in eighth-grade task goals and 16% of the variance in eighth-grade relative ability goals.[2] For the other measures, small amounts of variance were explained by the prior goal measures (adjusted r^2 = .05–.07). Distributions of the residuals were inspected to ensure their normal distribution and heteroscedacity. All of the coefficients presented subsequently (in Figure 2 and Tables 2 and 3) represent the predictive relations among the variables above and beyond any influence attributable to students' prior achievement goals. Because the correlations among these measures were slightly different from those presented in Table 1, they are presented in Tables 2 and 3 along with the regression results.

Regression Analyses

To examine the multivariate relations among the eighth-grade measures specified in Figure 1, after partialing out any variance due to students' prior achievement goals, we conducted regression analyses with the residual measures. Sequential regression analyses were used to test the two sets of mediated relations specified in Figure 1. First, we were interested in whether the personal goal and belonging measures mediated the relations between the school perceptions and the psychological outcomes. Second, we examined whether the psychological outcomes mediated the relations between the goal and belonging measures and academic achievement, controlling for the other variables in the model.

According to Baron and Kenny (1986), to conclude that there is evidence of a mediated relationship, the following conditions must be met: (a) There must be significant relations between the predictors and the outcomes; (b) there must be significant relations between the predictors and the mediators; and (c) there must be significant relations between the mediators and the outcomes when all of the variables are entered into the same equation, and these relations must reduce the direct effects of the predictors on the outcomes. In instances where these conditions of mediation were satisfied, we then calculated the indirect effects, their standard errors, and their level of statistical significance using a formula described by Sobel (as cited in Baron & Kenny, 1986)

Following Judd and Kenny (1981), sequential regression analyses were conducted to test each of these three conditions for mediation. The first set of mediated relations we examined involved the school perceptions (predictors), goal and belonging measures (mediators), and psychological outcome measures (outcomes). First, we regressed each of the psychological outcome measures on the school perceptions to test for direct effects (Condition 1). Once these direct effects were established, the goal and belonging measures were regressed on the school perceptions to examine the first links in the hypothesized mediational sequence (Condition 2). Finally, the last analysis involved simultaneous regressions for each outcome measure that included both the school perceptions (predictors) and the personal goal and belonging measures (mediators). Evidence for mediated relations would include a direct effect of the mediators on the outcomes and the diminishment of the direct links between the school environment perceptions and the outcomes in these final equations (Condition 3). The same strategy was used to test the second set of mediated relations. This set of regressions examined the direct and indirect relations between the goal and belonging measures (predictors), psychological outcome measures (mediators), and academic achievement (outcome).

From Predictors to Outcomes: School Perceptions and Psychological Outcomes

Table 2 presents the first set of sequential regressions. Direct effects of the school perceptions on the psychological outcomes are found under the "Model 1" column. To examine the direct effects of the school perceptions on the psychological outcomes (academic self-efficacy, self-consciousness, school affect), each of these outcomes were regressed on the school perception measures and the statistical controls (gender, race, lunch status, prior achievement). Results showed that perceptions of a school-task goal structure had a direct positive effect on academic self-efficacy (β = .28, $p \leq .01$) after controlling for students' entry characteristics and the other school perceptions. Similarly, perceptions of a school-ability goal structure had a direct positive effect on academic self-consciousness (β = .22, $p \leq .01$), whereas perceived teacher–student relationships had a direct positive effect on positive school affect (β = .23, $p \leq .01$).

From Predictors to Mediators: School Perceptions and Goals and Belonging

The second set of analyses regressed each of the mediating variables, in this case the personal goal and belonging measures, on the school perceptions and statistical controls. These results are summarized in Figure 2. As hypothesized, perceptions of a school ability goal structure was the strongest positive predictor of personal relative ability goals (β = .40, $p \leq .01$), whereas perceptions of a school task

[2] For the prediction of eighth-grade personal task goals, prior task goals were significant (β = .38, $p \leq .0001$) and prior ability goals were not. In the prediction of eighth-grade ability goals, prior ability goals were a significant predictor (β = .38, $p \leq .0001$) whereas prior task goals were not.

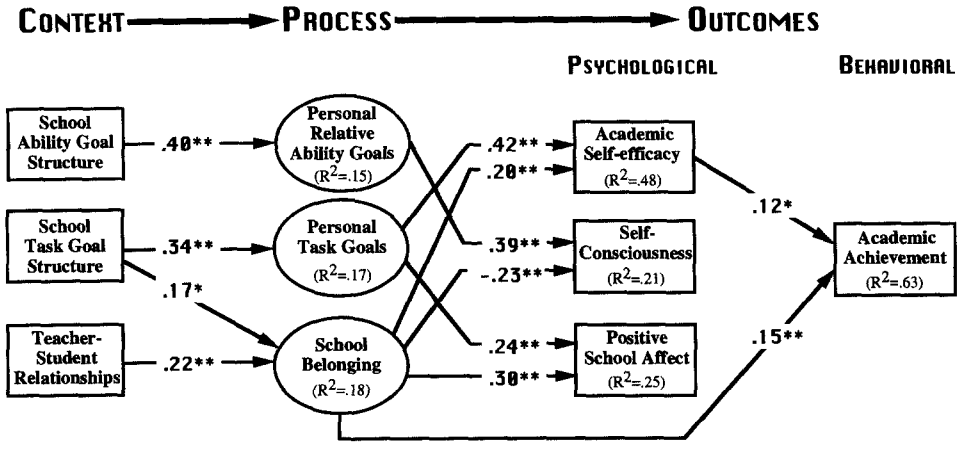


Figure 2. Results of regression analyses. $N = 264$. Standardized regression coefficients and adjusted R^2s are presented. Measures of prior achievement, gender, race, and free-lunch status (socioeconomic status [SES]) were included in the equations as statistical controls but are not presented for reasons of clarity. All measures have been adjusted for adolescents' prior achievement goals. Prior achievement was the strongest predictor of academic achievement ($\beta = .66, p \leq .001$), but this coefficient is not depicted here. * $p \leq .05$. ** $p \leq .01$.

structure ($\beta = .34$, $p \leq .01$) and the quality of teacher–student relationships ($\beta = .22$, $p \leq .01$) were the strongest predictors of personal task goals and feelings of school belonging, respectively. Perceptions of a school task goal structure also had a small, positive effect on feelings of school belonging ($\beta = .17$, $p \leq .05$).

Mediated Effects: Goals and Belonging to Psychological Outcomes

Mediation was tested by regressing each of the psychological outcomes on the goal and belonging measures in the presence of the school environment perceptions and statistical controls. Results are presented in Table 2 under the column labeled "Model 2." For academic self-efficacy, students' personal task goals ($\beta = .17$, $p \leq .05$) and feelings of school belonging ($\beta = .17$, $p \leq .05$) had positive effects in the full equation that included the school perception measures. Furthermore, in the presence of these mediators, the relation of school-task goal perceptions to academic self-efficacy dropped to nonsignificance ($\beta = .10$, *ns*). Together, these results satisfied Baron and Kenny's (1986) criteria for mediation. As predicted, the indirect effect of a perceived school-task goal structure on academic self-efficacy through personal task goals was significant ($\beta = .14$, $p \leq .001$); the indirect relation through feelings of school belonging was not. Overall, 48% of the variance in academic self-efficacy was explained, with prior GPA, personal task goals, and feelings of belonging emerging as the strongest predictors.

For self-consciousness, personal relative ability goals ($\beta = .39$, $p \leq .01$) and feelings of belonging ($\beta = .23$, $p \leq .01$) had significant effects in Model 2. Students' relative ability goals had a positive relation to feelings of self-consciousness in school, whereas feelings of belonging were negatively related to self-consciousness. In addition, the direct relation of perceptions of a school-ability goal structure on self-consciousness dropped to nonsignificance in this equation ($\beta = .07$, *ns*), indicating mediation. Again, as hypothesized, the indirect effect of perceptions of a school-ability goal structure on academic self-consciousness through personal relative ability goals was significant ($\beta = .16$, $p \leq .001$). Twenty-one percent of the total variance was explained, with personal relative ability goals emerging as the strongest predictor of academic self-consciousness during eighth grade.

For positive school affect, evidence for mediation was also found. In the second model, students' feelings of school belonging ($\beta = .45$, $p \leq .01$) and personal task goals ($\beta = .25$, $p \leq .01$) had significant positive effects on positive school affect, and the direct relation of a perceived teacher–student relationships dropped to nonsignificance ($\beta = .14$, *ns*) in this equation. The indirect effect of perceived teacher–student relationships on positive school affect through feelings of school belonging was significant ($\beta = .07$, $p \leq .05$). In total, 25% of the variance in positive school affect was explained, with personal task goals and feelings of school belonging emerging as the only significant predictors in the final model.

Predicting Year-End Academic Grades

Table 3 shows the results for the final set of analyses that examined the predictors of students' year-end academic GPA. We tested whether the psychological outcomes (academic self-efficacy, self-consciousness, school affect) mediated the relations between students' achievement goals, school belonging, and their academic grades. No support for these mediated effects emerged. Thus, only results of the second model that included all of the predictors simulta-

Table 2
Standardized Regression Coefficients for Student Entry Characteristics, School Environment Perceptions, and Mediating Process Measures Predicting Psychological Outcomes Related to School

Predictor	Psychological outcome								
	Academic self-efficacy			Academic self-consciousness			Positive school affect		
	Model 1	Model 2	*r*	Model 1	Model 2	*r*	Model 1	Model 2	*r*
Step 1									
Prior academic achievement	.38**	.25**	.35**	.01	.04	.05	.12	.00	.17**
Gender	.16**	.13**	.07	−.11	−.13*	−.10	−.06	−.10	−.10
Race	−.14**	−.11*	−.11	.10	.08	.13*	.05	.07	.09
School lunch program (SES)	−.03	−.03	.05	.02	−.01	.02	.01	.02	.06
School-ability goal structure	.11	.08	−.05	.22**	.07	.14*	.05	.03	−.12
School-task goal structure	.28**	.10	.33**	.09	.12	.05	.11	−.02	.27**
Teacher–student relationships	.07	.00	.23**	.07	.11	.02	.23**	.14	.27**
Step 2									
Personal relative ability goals		.06	.15*		.39**	.37**		.02	.04
Personal task goals		.42**	.61**		−.10	−.12		.24**	.41**
Feelings of belonging in school		.20**	.50**		−.23**	−.22**		.30**	.42**
ΔR^2		.23			.18			.16	
ΔF	13.33**	38.39**		2.36*	19.53**		5.09**	40.72**	
Total adjusted R^2	.25	.48		.03	.21		.10	.25	

Note. $N = 264$. Model 1 included entry characteristics and school perceptions only; Model 2 included entry characteristics, school perceptions, and hypothesized mediators. Gender is coded 0 = *Females,* 1 = *Males;* Race or ethnicity is coded 0 = *African American,* 1 = *White;* School lunch program is an index of socioeconomic status (SES), and is coded 0 = *Participation,* 1 = *No participation. r* refers to the bivariate correlations between the predictor and outcome measures that have been adjusted for students' prior achievement goals.
* $p \leq .05$. ** $p \leq .01$.

neously are discussed. These results are summarized in Figure 2. For students' year-end GPA, prior academic GPA was by far the strongest predictor ($\beta = .66$, $p \leq .01$). Academic self-efficacy ($\beta = .12$, $p \leq .05$) and feelings of belonging ($\beta = .15$, $p \leq .01$) also had small, positive effects on year-end grades above and beyond the variance explained by prior academic achievement. In total, 63% of the variance in year-end grades was explained.

Discussion

The results of this study suggest that middle school environments that are perceived as supportive, caring, and as emphasizing individual effort and improvement are related to a more adaptive pattern of cognition, affect, and behavior than are middle-school environments that are perceived as less supportive and emphasizing relative ability and competition (e.g., Battistich et al., 1995; Eccles, Midgley, et al., 1993; Maehr & Fyans, 1989). These results corroborate previous research on early adolescence and schooling (see Eccles & Midgley, 1989) and are strengthened because we (a) tested the direct and indirect relations between measures of the perceived context, mediating motivational beliefs, and indicators of psychological and behavioral functioning in school using a rather rigorous set of criteria (Baron & Kenny, 1986) and (b) used longitudinal measures to account for prior student characteristics known to influence subsequent perceptions (Nolen & Haladyna, 1990). Below we discuss findings concerning the interrelations among different dimensions of the perceived school environment, as well as the processes by which these different dimensions relate to specific academic outcomes.

Dimensions of the School Psychological Environment

The current study focused on two dimensions of the school psychological environment, the relationship and goal dimensions, which to our knowledge have not been examined together previously. We found that students' perceptions of the goal dimension of the school environment were strongly related to their perceptions of the relationship dimension of the school environment. Students who perceived their school as emphasizing understanding, effort, and personal development also perceived that teachers cared about, trusted, and respected students. In contrast, when students perceived that only the most able students were recognized, rewarded, and given support, they also perceived that relationships between students and teachers in the school were less warm and responsive.

Relations of School Dimensions to Academic Outcomes

Although other studies have documented the relations between perceptions of the school environment and psychological and behavioral outcomes related to school (e.g.,

Table 3
Standardized Regression Coefficients for Student Entry Characteristics, School Environment Perceptions, Mediating Process Measures, and Psychological Outcomes Predicting Academic Achievement

Predictor	Behavioral outcome		
	Second semester eighth-grade academic GPA		
	Model 1	Model 2	*r*
Step 1			
Prior academic achievement	.69**	.66**	.76**
Gender	.00	−.03	−.08
Race	.04	.06	.14*
School lunch program (SES)	.03	.04	.23**
School-ability goal structure	−.02	−.02	−.06
School-task goal structure	.01	.00	.17**
Teacher–student relationships	.02	.04	.14*
Personal relative ability goals	.08	.08	.17*
Personal task goals	.06	.02	.34**
Feelings of belonging in school	.16**	.15**	.40**
Step 2			
Academic self-efficacy		.12*	.45**
Self-consciousness		−.03	.01
Positive school affect		−.07	.18**
ΔR^2		.01	
ΔF	44.23**	2.70**	
Total adjusted R^2	.63	.63	

Note. $N = 260$. Model 1 included entry characteristics, school perceptions, and mediating process measures only. Model 2 included entry characteristics, school perceptions, mediating process measures, and psychological outcomes related to school. Gender was coded 0 = Girls, 1 = Boys; Race was coded 0 = African-American, 1 = White. *r* refers to the bivariate correlations between the predictor and outcome measures that have been adjusted for students' prior achievement goals. GPA = grade point average.
* $p \leq .05$. ** $p \leq .01$.

Maehr & Fyans, 1989), less attention has been directed toward clarifying the processes that link student perceptions of the psychological environment with academic outcomes (Andersen, 1982). In one set of relations, we examined how it is that perceiving that the school emphasizes qualitatively different purposes for learning (e.g., task or relative ability goals) relates to student outcomes. Our results indicate that it is through the achievement goals students adopt themselves in a given environment and that personal achievement goals reflect students' active attempts at understanding and interpreting the purposes for achievement that are emphasized in their school (Maehr, 1991).

Students' who perceived their school as emphasizing task goals reported feeling more academically efficacious, with this relation being mediated through students' personal task goal orientation. Given the many studies that have found links between students' task goals, their academic self-efficacy beliefs, and actual achievement as measured by grades (Ames, 1992a; Multon, Brown, & Lent, 1991), understanding the school and classroom-level factors that promote students' adoption of task goals remains a high priority for researchers in this area.

A different set of mediated relations were found for perceptions of a school-ability goal focus. Students who perceived an emphasis on competition and relative ability in their school were more likely to feel self-consciousness in academic situations, with this relation being mediated through students' own espousal of relative ability goals. Adolescence is known to be a time of increased academic concerns and general self-consciousness (Elkind & Bowen, 1979; McGuire et al., 1987) and some researchers have argued that competitive academic environments may serve to increase these feelings of self-consciousness at a time when this could be most detrimental to youths' self-image (see Eccles & Midgley, 1989; Elias, 1989). This study provides support for these notions. The anxiety that appears to accompany students' efforts to outperform others, as well as the need to negotiate perceived threats to self-worth under these goal conditions seem less than optimal for both learning and positive development (Covington, 1992; Elias, 1989; Nicholls, Patashnick, Cheung, Thorkildsen, & Lauer, 1989). As Elias (1989) noted, "The competition to be the best pervades many school climates. But too few children have access to this valued role and the resulting pressures . . . contribute to a sense of failure and alienation" (p. 394). Although some concern and worries in academic settings where evaluation is ubiquitous may be natural, to the extent that a reduction of anxiety in school settings is a valued educational outcome in its own right, practices that serve to deemphasize relative ability and competition in middle schools may be desirable.

In a second set of relations, we found that students who reported more positive teacher–student relationships also said that they experienced more positive affect when in

school, with this relation being mediated through feelings of school belonging. Students who experienced a feeling of belonging in their middle school also felt more academically efficacious and less self-conscious. Feeling positively about how teachers and students interact in school may provide a secure emotional basis from which students can both come to enjoy school and also develop their academic competence without feeling self-conscious or worried about failure (e.g., Boekaerts, 1993; Connell, 1990). Furthermore, positive relationships with teachers may serve a particularly important role in facilitating adjustment during early adolescence when youth need nonparental role models and mentors.

Prediction of School Achievement

In examining the predictors of students' end-of-the-year school achievement, prior academic achievement emerged as the strongest predictor. This suggests that school achievement is quite stable across these years (e.g., Skaalvik & Hagtvet, 1990). However, corroborating other research on academic self-perceptions and achievement, we also found that students who felt more academically efficacious received higher year-end grades, even after controlling for the influence of prior achievement (Bandura, 1993; Eccles, 1983; Pintrich & De Groot, 1990). It is interesting to note that academic self-efficacy did not mediate the relations of students' personal goals and year-end grades, however. This suggests that achievement goals relate primarily to other aspects of motivation (e.g., efficacy beliefs) and cognition (e.g., learning strategy use), and that it is these factors which in turn are related to actual achievement (Ames, 1987; Pintrich & De Groot, 1990). We also found a direct relation of feelings of school belonging with end-of-the-year achievement after controlling for students' prior achievement and all of the other variables in the model. Although we cannot be certain of the causal direction of this relation, it certainly accords with work that suggests emotional support and feelings of relatedness are important motivators of achievement (Connell, 1990; Goodenow, 1993a).

Limitations

Several limitations of the present study are important to note. First, the correlational nature of these findings preclude us from ascertaining the causal flow among the variables examined. It is likely that many of these relations are reciprocal over time. The replication of this study with longitudinal measures would help to clarify the causal nature of these relations. Second, we emphasized the primary role of students' phenomenological experience of school in relation to their individual psychological and behavioral functioning at school and suggested that policies and practices in middle schools influence students' perceptions of the goal structures in these schools (Maehr, 1991; Maehr & Midgley, 1991). Although an examination of practices in middle schools, as well as empirical studies comparing elementary and middle school environments support these assumptions (Midgley, 1993; Midgley, Anderman, & Hicks, 1995), this study did not examine the link between school policies and practices and students' perceptions. Thus, the generalization of these findings, which are based upon individual perceptions, to discussions of the associations between academic outcomes and the school context per se must be made with caution (Andersen, 1982). In the future, the use of longitudinal measures of students' school experiences and functioning and triangulation of the findings reported here with other sources of information on the school context, including principal and teacher reports, observational measures, and checklists of school level practices and procedures, would serve to strengthen our interpretations of these results. Finally, the measures examined in this study contributed little to the prediction of achievement when prior achievement was included in the analyses. We believe that the psychological indicators (e.g., goals, belonging, efficacy beliefs) examined in this study are likely to share stronger relations with other important behavioral outcomes associated with school such as task persistence, choice, and continuing motivation (Eccles, 1983; Nicholls, 1984). Expanding the set of outcome measures to include these other types of educational outcomes, as well as aspects of students' mental health, is part of our ongoing research program (Midgley & Maehr, 1994; Roeser & Eccles, 1996).

Summary

There is currently considerable discussion about the need to enact reforms that create a personalized, caring environment in schools that serve young adolescents (Battistich et al., 1995). Recommendations to develop "small houses" or schools-within-a-school and advisory periods are examples of such reform efforts (Carnegie Council on Adolescent Development, 1989). However, there is less discussion about the need to de-emphasize honor rolls, special privileges for the brighter students, and competition among students. It has been our experience in middle schools that recognizing and rewarding students based on their ability relative to others is a common practice and one that is assumed to have a positive influence on the motivation of most, if not all students (Maehr & Midgley, in press). In our conversations with middle school teachers, they speak positively about the role of the honor society, special privileges for the more able students, and recognition for superior performance. These are often thought of as "incentives" and as promoting higher standards. In reality, these incentives may be undermining students' perceptions that their schools value and care for them as individuals and may be limiting the number of students who feel a sense of success and belonging at school (Elias, 1989; Marsh, 1991). Given that we know that youth who experience secondary schools as both frustrating academically and unsupportive interpersonally are most likely to disengage from school (Fine, 1991; Wehlage & Rutter, 1986), an important direction for future research in this area is understanding how social relationships and motivational goal structures are related in the

everyday experience of adolescents in middle schools. Such knowledge could contribute to discussions about how best to make middle schools academically motivating and supportive for all students.

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Appendix

School Goal Dimension

School Task Goal Structure (6 items; α = .81)

In this school, teachers believe all students can learn.
(1 = *Not at all true in this school,* 3 = *Somewhat true in this school,* 5 = *Very true in this school*)

In this school, understanding the work is more important than getting the right answers.

In this school, mistakes are okay as long as we are learning.

(*Appendix continues on next page*)

In this school, teachers think how much you learn is more important than test scores or grades.
Teachers in this school want students to really understand their work, not just memorize it.
Trying hard counts a lot in this school.

School Ability Goal Structure (5 items; α = .80)

In this school, teachers treat kids who get good grades better than other kids.
(1 = *Not at all true in this school,* 3 = *Somewhat true in this school,* 5 = *Very true in this school*)
In this school, only a few kids get praised for their school work.
In this school, teachers only care about the smart kids.
This school has given up on some of its students.
In this school, special privileges are given to students who get the highest grades.

School Relationship Dimension

Perceived Teacher–Student Relationships (5 items; α = .81)

In this school, students' ideas are listened to and valued.
(1 = *Not at all true in this school,* 3 = *Somewhat true in this school,* 5 = *Very true in this school*)
In this school, teachers and students really trust one another.
In this school, teachers treat students with respect.
In this school, students feel like they belong.
This school really cares about students as individuals.

Personal Achievement Goals

Eighth-Grade Personal Task Goals (5 items; α = .81)

Understanding the work in school is more important to me than the grade I get.
(1 = *Not at all true of me,* 3 = *Somewhat true of me,* 5 = *Very true of me*)
I like school work that I'll learn from even if I make a lot of mistakes.
The main reason I do my work in school is because I like to learn.
I like school work the best when it really makes me think.
I feel most successful in school when I learn something I didn't know before.

Sixth-Grade Personal Task Goals (3 items; α = .73)

I often choose projects that I will learn from, even if I know I will need to work very hard.
(1 = *Not at all true of me,* 3 = *Somewhat true of me,* 5 = *Very true of me*)
I like to learn new things.
When I work hard in school, it's mainly because I like learning new things.

Eighth-Grade Personal Relative Ability Goals (6 items; α = .84)

I feel good if I am the only one who can answer the teacher's questions in class.
(1 = *Not at all true of me,* 3 = *Somewhat true of me,* 5 = *Very true of me*)
I like to show my teachers I'm smarter than the other kids.
I worry about whether my teachers think I am as smart as other kids in my classes.
I would feel successful in school if I did better than the other students in my classes.
I'd like to show my parents that I'm smarter than the other kids in my classes.
I worry about doing worse than other students in school.

Sixth-Grade Personal Relative Ability Goals (3 items; α = .62)

I like to show my teachers that I'm smarter than the other kids.
(1 = *Not at all true of me,* 3 = *Somewhat true of me,* 5 = *Very true of me*)
If I were the only one in a class who could answer a question, I would feel really good.
Doing better than other kids in my classes is important to me.

Relatedness

School Belonging (4 items; α = .76)

I feel like I belong in this school.
(1 = *Not at all true of me,* 3 = *Somewhat true of me,* 5 = *Very true of me*)
I feel like I am successful in this school.
I feel like I matter in this school.
I do not feel like I am important in this school (reversed).

Self-Beliefs

Academic Self-Efficacy (6 items; α = .86)

I'm certain I can master the skills taught in school this year.
(1 = *Not at all true of me,* 3 = *Somewhat true of me,* 5 = *Very true of me*)
I can do even the hardest school work if I try.
If I have enough time, I can do a good job on all my school work.
I can do almost all the work in school if I don't give up.
Even if the work in school is hard, I can learn it.
I'm certain I can figure out how to do the most difficult school work.

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