

APPENDIX A  
Variance/Covariance Matrix

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Ever had sexual intercourse	0.25																		
2. Started a fist fight	0.14	1.38																	
3. Shoplifted from a store	0.11	0.42	1.28																
4. Damaged property	0.13	0.56	0.57	1.20															
5. Stayed out all night	0.21	0.70	0.63	0.71	2.32														
6. Lied to parents or dorm aides	0.13	0.45	0.62	0.55	1.30	2.28													
7. Number of times used marijuana	0.79	2.48	2.12	2.34	3.68	2.06	67.6												
8. Alcohol use quantity/frequency	0.14	0.32	0.23	0.29	0.51	0.40	3.17	0.66											
9. Negative consequences	0.05	0.24	0.10	0.14	0.19	0.14	1.17	0.18	0.16										
10. Problem drinking behavior	0.08	0.22	0.17	0.21	0.38	0.30	1.92	0.38	0.18	0.40									
11. Grade point average	-0.02	-0.11	-0.07	-0.09	-0.15	-0.09	-0.96	-0.08	-0.04	-0.07	0.58								
12. How well do you do in school?	-0.03	-0.06	-0.06	-0.06	-0.15	-0.08	-0.79	-0.05	-0.03	-0.05	0.31	0.55							
13. Do schoolwork carefully	-0.03	-0.11	-0.15	-0.16	-0.19	-0.19	-0.97	-0.12	-0.05	0.08	0.23	0.20	0.81						
14. Anxiety	0.01	0.02	0.04	0.02	0.07	0.12	-0.03	0.02	0.01	0.02	0.01	0.00	-0.02	0.09					
15. Depression	0.04	0.05	0.11	0.10	0.19	0.24	0.24	0.09	0.06	0.09	-0.01	-0.02	-0.06	0.09	0.44				
16. Competence	0.01	0.06	-0.01	0.01	-0.04	-0.05	-0.42	-0.05	-0.02	-0.03	0.10	0.12	0.31	-0.02	-0.05	0.51			
17. Self-esteem	0.01	-0.01	-0.01	-0.02	-0.04	-0.04	-0.30	-0.03	-0.02	-0.03	0.06	0.06	0.08	-0.01	-0.04	0.07	0.14		
18. Personal mastery	0.00	-0.07	-0.08	-0.06	-0.12	-0.12	-0.70	-0.10	-0.06	-0.09	0.12	0.11	0.20	-0.05	-0.15	0.18	0.10	0.49	
19. Social support	0.00	-0.11	-0.10	-0.12	-0.09	-0.05	-1.23	-0.08	-0.06	-0.06	0.13	0.11	0.24	0.00	-0.04	0.22	0.08	0.23	0.92

## Adolescents' Perceptions of Middle School: Relation to Longitudinal Changes in Academic and Psychological Adjustment

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We present results of a longitudinal study of 1,046 adolescents in 23 middle schools that examined relations between adolescents' perceptions of their middle school learning environment during 8th grade (school goal structures, autonomy provisions, positive teacher regard) and changes in their academic motivation, achievement, and psychological adjustment from 7th to 8th grade. Hierarchical regression analyses showed that adolescents' school perceptions were significant predictors of their academic and psychological adjustment at the end of 8th grade after accounting for their demographic characteristics, prior academic ability, and prior adjustment assessed at the beginning of 7th grade. Perceptions of positive teacher regard and an emphasis on individual effort and improvement in school (school task goal structure) were associated with increases in academic values, feelings of academic competence, and academic achievement; and decreases in depressive symptoms from 7th to 8th grade. Perceived teacher regard also predicted diminished anger and school truancy and increases in self-esteem over time. Perceptions of an emphasis on competition and differential treatment by ability in middle school (school ability goal structure) were related to diminished academic values, feelings of self-esteem, and academic achievement;

and increases in school truancy, anger, and depressive symptoms over time. The developmental significance of adolescents' perceptions of middle school for multiple aspects of their adjustment is discussed.

Research on the early adolescent period (ages 10–14) has documented normative declines in indicators of school motivation and performance (Eccles & Midgley, 1989) and increases in the prevalence of psychological difficulties such as depressive symptoms and particular problem behaviors such as school truancy (Achenbach, Howell, Quay, & Conners, 1991; Kazdin, 1993; Petersen et al., 1993). Whereas some researchers have focused on the role that psychological and physiological factors play in such changes (see Blos, 1962; Buchanan, Eccles, & Becker, 1992; Freud, 1946), others have directed attention to the role of ecological factors (Eccles, Midgley, et al., 1993; Jessor, 1993). However, ecologically oriented studies of adolescent development to date have focused on the family environment, and other developmental contexts such as schools remain relatively unexplored (Maughan, 1988). Furthermore, with some notable exceptions, the relations between aspects of secondary school environments and indexes of adjustment beyond the academic domain, such as psychological well-being, distress, or engagement in problem behaviors, have yet to be examined (see Eccles, Lord, & Roeser, 1996; Felner et al., 1993; Hoge, Smit, & Hanson, 1990; Rutter, Maughan, Mortimore, & Ouston, 1979; Weinstein et al., 1991).

Drawing upon current ecological theories of achievement motivation and adolescent development, we examine how adolescents' perceptions of their middle school environment relate to changes in their academic and psychological adjustment from the beginning of seventh to the end of eighth grade. We extend previous research on schooling and adolescent development in several specific ways. First, by using theory and constructs derived from Eccles and Midgley's (1989) Stage-Environment Fit Theory applied to middle level schools, as well as achievement goal approaches to academic motivation and middle level schooling (Maehr & Anderman, 1993; Maehr & Midgley, 1991), we address the criticism that much of the work on schooling and its impact on student outcomes has been atheoretical (Good & Weinstein, 1986). Second, we focus on adolescents' phenomenological experience of school and the implications of such subjective perceptions of schooling for changes in academic and psychological adjustment. Third, by focusing on both academic (academic self-concept, values, achievement, school truancy) and nonacademic outcomes (self-esteem, anger, depressive symptoms), we seek to understand how adolescents' phenomenological experience of their middle school relates to developmental outcomes not

traditionally examined in research on schooling (Good & Weinstein, 1986). Understanding how school perceptions are related to nonacademic outcomes extends previous research within the stage-environment fit and achievement goal paradigms that has mainly examined academic outcomes (e.g., Eccles, Midgley, et al., 1993; Maehr & Fyans, 1989; Roeser, Midgley, & Urdan, 1996).

### THE SUBJECTIVE EXPERIENCE OF MIDDLE SCHOOL

In utilizing adolescents' perceptions of the school context, we draw attention to the important role that meaning-making at the individual level plays in the determination of school effects (Andersen, 1982). Researchers in developmental and educational psychology have increasingly recognized the importance of individual students' construction of meaning in school as an important mediator between the actual school context and their school-related feelings, beliefs, and actions (Ames, 1992; Maehr, 1991; Weinstein, 1989). In commenting on this phenomenological approach to assessing the environment, Ryan and Grolnick (1986) noted: "It is the functional significance or meaning of the environment to the individual rather than the environment per se that is the most important aspect of concern for the investigation of motivational and personality variables" (p. 550). Given that individual adolescents experience different academic programs, instructional treatments, sequences of teachers, and social interactions with teachers, we find this approach useful in understanding how adolescents' general experience in school impacts the course of their development.

### CHANGES IN ADJUSTMENT DURING EARLY ADOLESCENCE

Upon entry to early adolescence and middle school, many youth perceive themselves as less academically competent; perceive school as less interesting, important, and useful; and receive lower teacher-rated grades (Eccles et al., 1989; Eccles, Midgley, & Adler, 1984; Simmons & Blyth, 1987). In terms of psychological functioning, a substantial number of young adolescents report depressive symptoms, declining self-esteem, and increased engagement in school misconduct (Achenbach et al., 1991; Dryfoos, 1990; Kazdin, 1993; Simmons & Blyth, 1987). Clearly, the early years of the adolescent period are marked by significant changes in adolescents' academic and psychological functioning.

In the first part of this study, we examine longitudinal changes in

academic and psychological functioning in our sample of adolescents as they move through middle school. Specifically, we examine mean level changes in adolescents' academic motivational beliefs (academic self-concept and values), academic grade point average (GPA) in the core subjects, incidence of skipping class or school, and indicators of psychological adjustment (esteem, anger, depressive symptoms) from the beginning of seventh grade to the end of eighth grade. Based upon previous research, we predicted that motivation and achievement as measured by grades would decline and that the incidence of skipping classes or school would increase. Further, we predicted an increase in psychological distress across the middle school years. Finally, we expected a significant increase in adolescents' self-esteem across these years. Whereas research has shown that global self-esteem declines and becomes less stable upon entry to junior high school (Simmons et al., 1973; Wigfield, Eccles, MacIver, Reuman, & Midgley, 1991), some studies have also shown that as adolescents progress through middle school and adjust to the demands of a new school, puberty, and new relationships with peers, their self-esteem increases again (Nottlemann, 1987; Wigfield et al., 1991). By the end of eighth grade we assumed many adolescents would have adjusted to the changes associated with early adolescence and thereby would show increased self-esteem.

We were also interested in the relations between adolescents' academic and psychological functioning. Few studies look at the relation of motivation, achievement, and psychological functioning in normative samples, and when such relations have been studied the findings have been equivocal. For instance, large, representative, cross-sectional studies of children and adolescents in the United States and Canada have documented a positive relation between school problems and emotional and behavioral problems (e.g., Achenbach et al., 1991; Rae-Grant, Thomas, Offord, & Boyle, 1989). Other work has suggested that both the concurrent and longitudinal causal relations between depressive symptoms and school motivation are less clear (Nolen-Hoeksema, Girgus, & Seligman, 1992). Similarly, although academic and behavioral problems do seem to "cluster" together in older adolescents (e.g., Donovan & Jessor, 1985; Dryfoos, 1990), it is not clear how specific motivational beliefs, achievement indicators, and indicators of psychological adjustment cluster together during the early adolescent period. To the extent that academic and psychological adjustment are related during these years, one might expect certain common social experiences (e.g., school experiences) to predict changes in both domains of functioning (Eccles & Midgley, 1989).

## A FOCUS ON CONTEXT

The seriousness of the problems characterizing many of today's adolescents has heralded a call for research that focuses less on strictly person variables (e.g., values, anger, etc.) and more on the kinds of social experiences that represent risk or protective factors in development during early adolescence (Eccles et al., 1996; Jessor, 1993; National Research Council, 1993; Wehlage & Rutter, 1986). In the school literature, there is a growing body of evidence to suggest that as young adolescents move from elementary school into middle school, changes in the nature of the learning environment can precipitate changes in academic motivation, achievement, and behavior (Eccles, Midgley, et al., 1993; Midgley, Anderman, & Hicks, 1995; Simmons & Blyth, 1987). These studies have focused on how the transition into the junior high or middle school environment is related to changes in the quality of adolescents' adjustment. What is not yet known is if adolescents' experiences in middle school are related to changes in their academic and broader psychological adjustment as they advance through the middle school years after this transition has occurred. In the second part of this study, we examine how adolescents' perceptions of their middle school learning environment predict changes in multiple aspects of their development as they progress through the middle grades.

## SCHOOLING AND DEVELOPMENT DURING EARLY ADOLESCENCE

Ecological theories of achievement motivation and adolescence have been used to understand how specific aspects of academic environments relate to the quality, direction, and intensity of youths' achievement strivings. Both stage-environment fit theory (Eccles & Midgley, 1989) and the achievement goal paradigm (Maehr & Midgley, 1991) have proven fruitful in delineating characteristics of middle school environments that relate to adaptive and maladaptive patterns of academic motivation and achievement behavior.

### Stage-Environment Fit Approach

The work of Eccles and Midgley (1989) suggests that developmentally appropriate school contexts, ones that provide opportunities that are sensitive to the developmental tasks confronting young adolescents, are critical in the facilitation of positive development. These authors argued that early

adolescence is a time when youth are increasingly self-conscious, have a need for positive support and regard from nonparental adults, and experience a desire for increased autonomy and participation in decision making. To the extent that schools provide opportunities that address these developmental issues, Eccles and Midgley hypothesize that positive school motivation, behavior, and mental health will follow. Affordances for student choice and input into class discussions, high expectations from teachers for all students regardless of their current ability, and a school environment in which one need not worry about being compared to others in terms of academic abilities are the kinds of school experiences hypothesized to lead to positive adjustment and achievement. On the other hand, negative motivational, behavioral, and emotional outcomes related to school are predicted to result when adolescents are afforded few opportunities for decision making or class participation, experience low teacher expectations, and have to deal with an emphasis on relative ability and social comparison related to academic performance in their schools. Although this particular set of school experiences may facilitate or deter positive school adjustment at any age, research has supported the notion that it is especially important during the adolescent years (Eccles & Midgley, 1989).

We examine several hypotheses based upon the stage-environment fit approach using adolescents' perceptions of their school learning environment. First, during a time of heightened self-consciousness, a perceived emphasis on relative ability and social comparison in school may cause some young adolescents to question their academic abilities, to feel that their self-esteem is being threatened, and possibly to feel angry or unhappy (Covington, 1992). Thus, we predicted adolescents' perceptions of such an emphasis would be related to diminished beliefs about their academic abilities and feelings of self-esteem, and increased negative feelings such as anger and depressive symptoms from seventh to eighth grade. Alternatively, at a time when youth need nonparental role models, adolescents who perceive that their teachers view them positively may feel more confident about their academic abilities and general self-esteem, may place more value on school, and may experience diminished feelings of anger and depressive affect. That is, positive teacher regard may provide adolescents with social-emotional resources that contribute to their academic and psychological well-being (e.g., Ryan, Stiller, & Lynch, 1994). Perceived opportunities for autonomy and participation in learning may have a similarly positive influence on adolescents' motivation, behavior, and psychological well-being over time (e.g., Deci & Ryan, 1985). Finally, to the extent that adolescents perceive their middle school as emphasizing social-comparison and relative ability, as providing few opportunities for autonomy, and as having unsupportive teachers, they may be more likely to

self-select themselves out of such an environment by skipping classes or school (Covington, 1992; Eccles & Midgley, 1989).

### An Achievement Goal Approach

A second related body of research on achievement motivation and adolescent development concerns the purposes for achievement that adolescents perceive as being emphasized in their middle school. Similar to other studies that have suggested that schools as a whole can be characterized as having a "climate" (Andersen, 1982) or an "ethos" (Rutter, 1980), Maehr and Midgley (1991) hypothesized that middle level schools, through particular policies, practices, and procedures, can be characterized as having an academic "culture" that emphasizes certain goals for achievement. For example, public honor rolls and assemblies for the highest achieving students, class rankings on report cards, or the recognition and reward of effort and improvement may all provide important, albeit different, notions about what constitutes "success" and is valued in a given school. As a social-cognitive view of motivation, the achievement goal perspective posits that the purposes of learning and the meanings of successful achievement that are conveyed both implicitly and explicitly through school practices, create a *school psychological environment* that is perceived by adolescents in the school (Maehr, 1991). Adolescents' perceptions of the school psychological environment, in turn, have been shown to relate to their academic beliefs, achievement behavior, and school-related affect (Maehr & Fyans, 1989; Roeser et al., 1996; Urdan & Roeser, 1993).

Research has focused on two main goal structures that define the purposes for learning in a given school environment: a *school task goal structure* and a *school ability goal structure* (see Maehr & Midgley, 1991). A school task goal structure reflects the extent to which a particular middle school, through its policies and practices, emphasizes task mastery as the main goal of learning, recognizes effort and improvement, and challenges every student to do his or her best regardless of their present ability level. A school ability goal structure, on the other hand, is conceptualized as the extent to which a school encourages competition among students, emphasizes getting the highest grades as the most important goal of learning, and provides differentially favorable treatment for the highest achieving students.

In the few studies that have examined school level goal structures, adolescents' perceptions have been used to understand how students appraise the purposes for learning that are emphasized in their school and how such meanings impact their own school-related cognitions, affect, and behavior (Maehr & Fyans, 1989; Roeser et al., 1996). Adolescents' perceptions are conceptualized as important mediators between the actual school

context and their feelings, beliefs, and actions related to that context. Past studies have shown that perceptions of a task goal structure in middle school are related to adolescents' reports of positive affect in school, academic self-efficacy and self-worth, the use of effective learning strategies, and positive in-school conduct. On the other hand, perceptions of a school ability goal structure in middle school are related to negative affect in school, diminished academic self-efficacy and self-worth beliefs, and increased school misconduct (Maehr & Fyans, 1989; Roeser et al., 1996; Urdan & Roeser, 1993). However, no work within the achievement goal tradition has examined the relation of perceived school goal structures to adolescents' general psychological adjustment or to changes in academic and psychological adjustment over time during middle school.

Based upon the achievement goal approach, we tested several hypotheses. First, as mentioned previously, both stage-environment fit theory and the achievement goal approach predict a negative impact of a perceived emphasis on competition, relative ability, and differential treatment by ability in middle school (school ability goal structure) on adolescents' self-beliefs, affect, and behavior. Middle schools perceived as having a strong ability goal emphasis are likely to be experienced as unrewarding, unmotivating, and perhaps psychologically debilitating for many students (Covington, 1992; Elias, 1989; Maehr & Midgley, 1991). By definition, schools perceived as having a strong ability goal emphasis are places where only a small group of high achieving students get rewarded or recognized and where students may feel that they have to try to outperform others to feel successful. This is often a stressful and unattainable endeavor (Covington, 1992). We predicted that a perceived school ability goal structure would relate to increased negative feelings in adolescents, increased truancy, and decreases in motivation and academic achievement over time. We also predicted that a school perceived as emphasizing task mastery, personal improvement and effort, and challenging work for all students (school task goal structure) would positively impact changes in academic achievement, beliefs about one's academic competence and the value of school, and self-esteem. Further, a perceived emphasis on task goals in school may also serve to diminish negative emotions such as anger and depressive affect that some adolescents bring with them to school. When students perceive a school task goal structure, they may feel that self-improvement and effort are more attainable goals than the goal of outperforming other classmates (e. g., ability goal). A focus of self-improvement can lead to the experience of success and its concomitant feelings of academic competence, self-esteem, and the instrumental value of school as a pathway to later opportunities.

## SUMMARY

In summary, this study examines three main research questions. First, how does adolescents' academic and psychological adjustment change from the beginning of seventh through the end of eighth grade? Second, how do indicators of school motivation, achievement behavior, and psychological adjustment relate to one another both within and across these grades? Third, how do adolescents' perceptions of the learning environment in their middle school during eighth grade relate to changes in their academic and psychological adjustment from seventh to eighth grade? We predicted that perceptions of positive teacher regard, autonomy provisions in school, and a school task goal structure would be related to positive changes in academic motivation, behavior, and psychological well-being over time and to diminished feelings of distress over time. In contrast, we predicted a perceived school ability goal structure would be related to negative changes in motivation, achievement behavior, and self-esteem, and to increases in anger and depressive symptoms over time.

Because other research has suggested that students' prior achievement, prior beliefs, and demographic characteristics can influence their subjective reports of the school environment (see Andersen, 1982), we controlled for adolescents' prior achievement, prior adjustment from the beginning of seventh grade, race, gender, and family socioeconomic status (SES) in each analysis. By using two waves of longitudinal data, we examined the relations of eighth-grade school perception measures to the various eighth-grade adjustment outcomes above and beyond the variance accounted for by prior adjustment, achievement, and demographic factors.

## METHOD

### Sample

Participants for this report were drawn from a larger longitudinal study that was part of the MacArthur Network on Successful Adolescent Development in High Risk Settings (Chair, R. Jessor). The study was designed to assess the influences of home, school, and peers on adolescents' academic, psychological, and social development (Principal Investigator, J. Eccles). Each participating family had a seventh grader who was in middle school during the first wave of the study in 1991. The sample represented 23 middle schools that were all part of one large, county-wide school district. Eighteen of these schools had only Grades 7 and 8; four also included Grade 6, and one included Grades 5 and 6. The sample is broadly representative of

different SES levels, with the mean pretax family income of the participants in 1990 being normally distributed around a mean of \$45,000–\$49,999 (range \$5,000–\$75,000). White families ( $M = \$50,000$ – $\$55,000$ ) reported slightly but significantly higher pretax incomes in 1990 than the African American families ( $M = \$45,000$ – $\$49,999$ );  $t(1,166) = 5.91, p < .001$ . For purposes of this study, we focus on the 1,046 African American and White adolescents who participated in both waves of data collection.<sup>1</sup> This includes equal numbers of boys and girls, 67% of whom self-identified as African American with the remainder self-identified as White.

### Measures

Data were obtained from face-to-face interviews and self-administered questionnaires collected from the target youth and their primary and secondary caregivers during the fall of 1991, the youths' seventh-grade year in middle school (Time 1 = seventh grade, 1991). Follow-up measures were collected during the spring and summer after the target group's eighth-grade school year (Time 2 = eighth grade, 1993). Thus, this study covers 2 full years of adolescents' middle school experience. Interviews and survey instruments were administered by trained interviewers in the participants' homes.

The face-to-face interview and self-administered questionnaires for students included measures related to perceptions of their home and school environment, peer group characteristics, and their academic motivational beliefs, school behavior, mental health, and activity involvement. In addition to self-report measures, indicators of school behavior were drawn from school records. These measures included academic GPA, school absences for seventh and eighth grade, and standardized achievement tests from the students' elementary school years. Although extensive questionnaires and interviews were conducted with the youths' primary and secondary caregivers, only data pertaining to the sociodemographic characteristics of the families, including family income, educational status of the parents, and

<sup>1</sup>This represents a 71% retention rate for the study. Analyses were conducted to determine how this sample of 1,046 youth compared to those who did not participate during both waves on a series of demographic characteristics, and psychological and academic achievement indicators collected during Wave 1. In general, mean comparisons indicated that the 434 youth who did not participate in the study during Wave 3 were from poorer families, were slightly older than the retained sample, and did slightly worse in school academically. No significant differences were found between nonparticipants and participants regarding sex, race, self-esteem, anger, or depression in 1991; or in the marital or employment status of the head of household during 1991.

occupational status of the parents were drawn from the parental data sources in this report.

The subset of measures used in this study can be grouped into five categories: (a) demographic characteristics drawn from parent reports; (b) youths' prior and current academic achievement drawn from school records; (c) youth self-reports of academic motivational beliefs and school truancy; (d) youth self-reports of psychological adjustment; and (e) youth perceptions of the school environment during eighth grade. Scales, sample items, and reliability coefficients for these measures are presented in Table 1. The motivation, achievement, and psychological adjustment measures were described previously and are therefore only summarized here (see Eccles, Early, Fraser, Belansky, & McCarthy, 1997; Eccles et al., 1989; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Kovacs, 1992). The school perception measures are somewhat newer and are described more fully in the following section.<sup>2</sup>

*Demographic measures.* Demographic characteristics of the target sample and their families were used as statistical controls. These measures included youths' race, (1 = African American, 2 = White), gender (1 = male, 2 = female), and family SES. The SES variable was assessed during 1991 and was a composite measure of the highest education level of the head of household, whether the head of household was currently employed at that time, and the mean pretax family income for the previous year (1990). These measures were standardized and averaged to form a composite scale. For the sample, the average education level of the head of household was "some post-high-school education"; 86% reported being employed in 1991; and the mean pretax income for families was between \$45,000–\$49,999 in 1990.

*Academic achievement measures.* A measure of prior academic ability that served as a statistical control was constructed from adolescents' total scores on the California Achievement Test taken during their third- and fifth-grade school year. This prior academic ability scale was internally consistent ( $\alpha = .90$ ). Academic GPAs were computed for the end of the adolescents' seventh- and eighth-grade school years. GPA was a composite average of teacher-rated grades in the core academic subjects (English, math, science; health and social sciences). Grades for each subject were drawn from adolescents' school records and were measured on a 5-point scale: 1 (*Failing*), 2 (*Ds*), 3 (*Cs*), 4 (*Bs*), 5 (*As*).

<sup>2</sup>A full version of the measures can be obtained by writing to Robert W. Roeser.

TABLE 1  
Summary of Measures and Sample Items

Scale Name	Sample Items	Items	Alphas	
			7th Grade	8th Grade
<b>Academic adjustment</b>				
Academic self-concept	How good are you in school subjects other than math? 1 ( <i>not at all good</i> ), 7 ( <i>very good</i> )	4	.78	.82
	Compared to other kids your age, how well do you do in math? 1 ( <i>much worse</i> ), 7 ( <i>much better</i> )			
Valuing of education	Getting a good education is the best way to get ahead in life for the kids in my neighborhood. 1 ( <i>strongly disagree</i> ), 5 ( <i>strongly agree</i> )	5	.60	.67
	Suppose you do get a good education, how likely is it you will end up with the kind of job you want? 1 ( <i>not very likely</i> ), 5 ( <i>very likely</i> )			
Skipping classes or school	How often do you skip school or cut classes? 1 ( <i>never</i> ), 2 (1-2 times a semester), 3 ( <i>about once a month</i> ), 4 ( <i>more than once a month</i> )	1	—	—
<b>Psychological adjustment</b>				
Self-esteem	How often are you pretty sure of yourself? 1 ( <i>almost never</i> ), 5 ( <i>almost always</i> )	3	.65	.72
	How often do you wish you were different (reversed)? 1 ( <i>almost never</i> ), 5 ( <i>almost always</i> )			
Anger	During the past month, how often have you felt so angry you wanted to smash or break something? 1 ( <i>almost never</i> ), 5 ( <i>almost always</i> )	3	.75	.87
	During the past month, how often have you felt so upset you wanted to hit or hurt someone? 1 ( <i>almost never</i> ), 5 ( <i>almost always</i> )			

TABLE 1 (Continued)

Depressive symptoms <sup>a</sup>	During the past month, how often have you felt very sad? 1 ( <i>almost never</i> ), 5 ( <i>almost always</i> )	6, 26	.82	.88
	During the past month, how often have you felt hopeless? 1 ( <i>almost never</i> ), 5 ( <i>almost always</i> )			
<b>School perceptions</b>				
Student autonomy	In your 8th grade school, how often do students get to decide where to sit? 1 ( <i>almost never</i> ), 5 ( <i>almost always</i> )	5	—	.70
	How often are students' ideas and suggestions used during classroom discussions? 1 ( <i>almost never</i> ), 5 ( <i>almost always</i> )			
School ability goal structure	In your 8th grade school, how true is it that students are encouraged to compete against each other for grades? 1 ( <i>not at all true</i> ), 5 ( <i>very true</i> )	5	—	.77
	How true is it that teachers treat students who get good grades better than other students? 1 ( <i>not at all true</i> ), 5 ( <i>very true</i> )			
School task goal structure	In your 8th grade school, how true is it that trying hard counts a lot? 1 ( <i>not at all true</i> ), 5 ( <i>very true</i> )	5	—	.70
	In your 8th grade school, how true is it that everyone is challenged to do their very best? 1 ( <i>not true at all</i> ), 5 ( <i>very true</i> )			
Positive teacher regard	In your 8th grade school, your teachers think you are a good student. 1 ( <i>strongly disagree</i> ), 5 ( <i>strongly agree</i> )	1	—	—

<sup>a</sup>During 7th grade, a 5-point Likert scale was used to assess depressive symptomatology. During 8th grade, we used Kovacs' (1992) Children's Depression Inventory, which includes 26 items. We did not ask the "suicide item" on her original scale.

**Academic adjustment measures.** Two self-report indicators of achievement motivation, and one self-report indicator of school behavior from the seventh and eighth grade were included. Measures of achievement motivation included youths' self-concept of academic ability and their valuing of education. The academic self-concept scale was drawn from the work of Eccles and her colleagues and has good psychometric properties that have been described elsewhere (Eccles, 1983; Eccles et al., 1989; Eccles, Wigfield, et al., 1993). These items assessed adolescents' beliefs concerning their academic competence in math and other school subjects relative to their same-age peers. The educational value measure was new and assessed whether adolescents perceived school as a pathway to later life opportunities for young people in general and for themselves in particular. Factor analysis revealed that youths' beliefs concerning both the personal and more general utility of education for later life opportunities formed one general "valuing of education" factor. Both motivation measures showed acceptable reliability ( $\alpha \geq .60$ ). A single school truancy item was asked of youth at each time point that assessed the frequency with which they reported skipping school or cutting classes during seventh or eighth grade: 1 (*never*), 2 (*1–2 times a semester*), 3 (*about once per month*), and 4 (*more than once per month*). Although the average frequency of skipping classes or school was quite low at both times for the sample as a whole, the incidence rose from 9% who responded that they had skipped class or school one or more times during seventh grade to 37% who reported doing so during the eighth grade. For this reason the measure was included. Sample items for the academic adjustment measures are presented in Table 1.

**Psychological adjustment measures.** Three measures of psychological adjustment including self-esteem, anger, and depressive symptoms were included at both seventh and eighth grade. The self-esteem measure was developed for several other large-scale studies of child and adolescent development (see Eccles, Midgley, et al., 1993; Eccles et al., 1996). These items assessed adolescents' global feelings concerning confidence in and satisfaction with oneself and were similar to the forced choices offered in Harter's (1982) self-worth scale. The self-esteem scale is statistically reliable and has been found to correlate with academic and psychological adjustment in a large sample of adolescents in another study (Eccles, Lord, Roeser, Barber, & Jozefowicz, 1997). The anger measures at Time 1 and Time 2, and the depressive symptoms measure at Time 1 were originally adapted from items on the Symptoms Checklist 90-Revised (Derogatis, Rickels, & Rock, 1976). These items assessed adolescents' reports of how frequently in the past month they had experienced symptoms such as feeling very upset, destructive, or hopeless. Items for these scales were assessed using a 5-point Likert format ranging from

1 (*almost never*) to 5 (*almost always*). During Time 2, depressive symptomatology was assessed using Kovacs' (1992) Children's Depression Inventory. This measure assessed the frequency of various symptoms of depression during the past 2 weeks on a 3-point scale: 0 (*absence of symptom*), 1 (*mild symptoms*), 2 (*definite symptom*). A total depression score was created by summing across all of the items. The Children's Depression Inventory has demonstrated reliability and validity as a measure of depressive symptoms (see Kovacs, 1992). Because the measures of depressive symptoms were not identical across time periods, no analysis of mean change in depressive symptoms over time could be conducted. Sample items for the psychological adjustment scales are presented in Table 1.

**School perception measures.** Items that assessed young adolescents' experiences in middle school included two types of perceptions: (a) perceptions of the general school environment, and (b) perceptions of a more individual nature concerning adolescents' beliefs about their teachers' regard for them as students. The general school perception items were factor analyzed together. Three scales emerged that accounted for 50% of the variance in these items: a school autonomy scale, a school task goal structure scale, and a school ability goal structure scale. The items comprising the autonomy scale were new and were derived from the theoretical work of Eccles and Midgley (1989). The autonomy scale tapped adolescents' reports of opportunities to make decisions concerning seating and selection of work partners in classes, and also whether they had opportunities to share and discuss their own ideas in classroom discussions (see Table 1). Adolescents' perceptions of school-level emphases on different goals for learning were adapted from the work of Midgley, Maehr, and their colleagues (see Midgley et al., 1995). The school task goal structure scale assessed adolescents' perceptions of their school as a place where all students were challenged, effort was recognized as important, and self-improvement and task mastery were emphasized as the most important goals of learning. The school ability goal structure scale included items that tapped adolescents' perceptions of their school as a place that emphasized competition, getting better grades than other students, and special treatment for the highest achieving students in the school. Each of these three scales was conceptually coherent and statistically reliable ( $\alpha > .70$ ). These scales have demonstrated reliability and predictive validity in terms of students' school-related beliefs, affect, and behavior (see Maehr & Midgley, 1996). Sample items are presented in Table 1. One final scale was used to measure whether adolescents believed that their teachers viewed them as good students, and ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). This measure was conceptualized



as tapping adolescents' perceived teacher expectations and positive regard and is presented in Table 1.

The correlations among the school perception measures were small to modest in size. A perceived school task goal structure was positively correlated with student autonomy,  $r = .42, p \leq .01$ , and positive teacher regard,  $r = .25, p \leq .01$ ; and negatively correlated with a perceived ability goal structure,  $r = -.29, p \leq .01$ . A perceived ability goal structure was negatively correlated with the student autonomy,  $r = -.14, p \leq .01$ ; and positive teacher regard scales,  $r = -.31, p \leq .01$ . Finally, student autonomy and teacher regard were significantly, positively related to one another,  $r = .20, p \leq .01$ .

## RESULTS

### Descriptive Results: Mean Changes and Correlations in Adjustment Over Time

A series of multivariate analyses of variance (MANOVAs) were conducted on each of the academic and psychological adjustment measures to assess change over time. The MANOVAs consisted of one within-subject factor (time: seventh and eighth grade) and two between-subject factors (gender and race). Table 2 presents the  $F$  values and their significance for the main effects (time, gender, race), as well as the means for each indicator during seventh and eighth grade. All higher order interactions were also tested in these analyses. Significant higher order interactions and the direction of the main effects for gender and race are discussed in the text. In addition to mean level changes, we examined correlations among different indicators of academic and psychological adjustment from seventh to eighth grade. These correlations are presented in Table 3.

**Mean changes in academic adjustment.** MANOVAs revealed that adolescents' self-concepts of academic ability and their perceptions of the instrumental value of education declined over time, whereas the frequency with which they reported skipping classes or school increased from seventh to eighth grade. Grades did not show a statistically significant change across these years.

The significant time effect for academic self-concept of ability was small,  $F(1, 935) = 9.97, p = .002$ , partial  $\eta^2 = .01$ , and no higher order interactions involving self-concept were found. For adolescents' school values, three main effects and two interaction effects were found. All adolescents reported a decline in their perceptions of the value of education from seventh

TABLE 2  
MANOVA Results for Adjustment Variables by Time, Gender, and Race

Variable	Means		F Values		
	7th Grade	8th Grade	Time	Gender	Race
Academic adjustment					
Academic self-concept	5.36	5.23	9.97**	0.05	0.07
Valuing of education	4.25	4.15	14.33**	23.88**	5.79*
Grade point average	3.67	3.63	3.57	81.89**	104.42**
Skipping classes or school	1.13	1.65	209.42**	3.15	3.69
Psychological adjustment					
Self-esteem	3.60	3.89	76.75**	27.21**	5.11*
Anger	2.21	2.35	10.99**	5.34*	19.56**
Depressive symptoms <sup>a</sup>	1.85	9.48	—	—	—

Note. Direction of main effects for gender and higher order interactions are discussed in the text. MANOVA = multivariate analysis of variance.

<sup>a</sup>Two different indicators of depressive symptoms were used across waves, thus no MANOVA was run for this indicator. Kovac's (1992) Children's Depression Inventory was used in 8th grade; 5-point Likert items were used during 7th grade.

\* $p < .05$ . \*\* $p < .01$ .

to eighth grade; girls and African American adolescents valued education more than did boys and Whites, respectively, across both time points. However, the effect sizes for all three main effects, including time (partial  $\eta^2 = .02$ ), gender (partial  $\eta^2 = .02$ ), and race (partial  $\eta^2 = .01$ ) were small. Significant Time  $\times$  Gender,  $F(1, 950) = 21.41, p < .001$ , partial  $\eta^2 = .02$ ; and Time  $\times$  Gender  $\times$  Race,  $F(1, 950) = 5.70, p = .017$ , partial  $\eta^2 = .01$ , interactions were also found. Although similar at the beginning of seventh grade, boys' educational values declined more substantially than did those of girls by the end of eighth grade. Furthermore, it was the White boys whose perceived value of education declined the most compared to any other group across these grades.

Skipping class or school increased in frequency over time (partial  $\eta^2 = .19$ ), with boys reporting more skipping at each time than girls,  $F(1, 933) = 4.16, p = .04$ , partial  $\eta^2 = .01$ . A significant Time  $\times$  Gender interaction,  $F(1, 933) = 5.21, p = .02$ , partial  $\eta^2 = .01$ , indicated that the frequency of skipping classes or school increased more among boys than among girls over these grades. For GPA, only main effects by gender and race were found; there was no significant change in grades from seventh to eighth grade. Girls received higher teacher-rated grades in the core academic subjects than did boys, and Whites received higher marks than did African Americans at the

end of both the seventh and the eighth grade. The effect sizes for gender (partial  $\eta^2 = .07$ ) and race (partial  $\eta^2 = .09$ ) were modest.

**Mean changes in psychological adjustment.** As predicted, MANOVA revealed a statistically significant increase in adolescents' self-esteem over the middle school years (partial  $\eta^2 = .07$ ). Boys (partial  $\eta^2 = .03$ ) and African Americans (partial  $\eta^2 = .01$ ) reported significantly higher self-esteem than did girls and Whites, respectively, at both time points. There was also a significant Gender  $\times$  Race effect for self-esteem,  $F(1, 952) = 5.34, p = .02$ , partial  $\eta^2 = .01$ ; with White girls having the lowest self-esteem of any group. For anger, results showed a general increase over time, with boys and African American youth reporting higher levels than did girls or Whites, respectively. On the anger scale, the effect sizes for time (partial  $\eta^2 = .01$ ), gender (partial  $\eta^2 = .02$ ), and race (partial  $\eta^2 = .01$ ) were all small. Due to the noncomparable measures of depressive symptoms, no analysis of change in this indicator was conducted.<sup>3</sup>

**Correlations among adjustment indicators.** Table 3 presents the bivariate relations between the academic and psychological adjustment indicators during seventh and eighth grades. Adolescents' beliefs concerning their academic ability and the value of education were each positively correlated with academic grades and self-esteem, and negatively correlated with skipping school, feelings of anger, and depressive symptoms during seventh grade. Anger and depressive symptoms showed modest, significant negative relations with academic achievement and modest, significant positive correlations with school truancy during seventh grade. The same pattern of relations, though slightly stronger in magnitude, was found during eighth grade.

**Predicting Change in Adjustment Outcomes Over Time**

Hierarchical regression analyses were used to assess the relative, independent contributions of adolescents' demographic characteristics and

<sup>3</sup>Gender and race differences on the depressive symptoms measures for the two time points were computed. During seventh grade, the only significant effect was a sex difference,  $F(1, 948) = 6.70, p \leq .01$ , with girls reporting more frequent symptoms than boys. During eighth grade, no significant gender or race main effects were found. There was a trend toward significance in the Gender  $\times$  Race interaction, however,  $F(1, 953) = 3.77, p = .053$ . African American boys reported the most symptoms, whereas White boys reported the fewest. African American and White girls were between these other groups and were quite similar in their reports.

TABLE 3  
Correlations Among Academic and Psychological Adjustment Measures From Seventh to Eighth Grade

Variable	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Academic self-concept	T1	—													
2. Academic self-concept	T2	.45*	—												
3. Valuing of education	T1	.28*	.22*	—											
4. Valuing of education	T2	.22*	.36*	.34*	—										
5. Grade point average	T1	.42*	.30*	.17*	.25*	—									
6. Grade point average	T2	.32*	.38*	.14*	.27*	.79*	—								
7. Skipping classes or school	T1	-.10*	-.11*	-.07	-.05	-.14*	-.12*	—							
8. Skipping classes or school	T2	-.16*	-.17*	-.10*	-.27*	-.26*	-.25*	.22*	—						
9. Self-esteem	T1	.24*	.24*	.17*	.09*	.11*	.08	-.08	-.06	—					
10. Self-esteem	T2	.16*	.25*	.14*	.10*	.04	.11*	-.03	-.09*	.51*	—				
11. Anger	T1	-.18*	-.16*	-.15*	-.12*	-.20*	-.19*	.19*	.22*	-.36*	-.22*	—			
12. Anger	T2	-.17*	-.20*	-.14*	-.19*	-.26*	-.30*	.12*	.28*	-.22*	-.30*	.42*	—		
13. Depressive symptoms	T1	-.16*	-.12*	-.04	-.12*	-.09*	.12*	.12*	-.53*	-.31*	.56*	.25*	—		
14. Depressive symptoms (CDI)	T2	-.26*	-.39*	-.24*	-.33*	-.26*	-.27*	.11*	.33*	-.35*	-.53*	.27*	.43*	—	

Note. Pairwise deletion is used. Autocorrelations are underlined. CDI = Children's Depression Inventory (Kovacs, 1992); T1 = Time 1 measures from the beginning of seventh grade; T2 = Time 2 measures from the end of eighth grade.  
\* $p \leq .01$ .

prior achievement (Step 1), prior adjustment during seventh grade (Step 2), and perceptions of their school environment collected at the end of eighth grade (Step 3) on each of the academic and psychological adjustment outcomes that were also collected at the end of eighth grade. We were interested in understanding how specific perceptions of the middle school independently predicted these developmental outcomes after controlling for adolescents' prior characteristics and prior adjustment. Results are presented in Tables 4, 5, and 6.<sup>4</sup>

**Predicting change in academic motivation over time.** Table 4 presents the hierarchical regression results for the achievement motivation indicators at the end of eighth grade. Overall, the models accounted for 29% of the variance in adolescents' academic self-concept and 26% of the variance in their educational values. Results showed that the eighth-grade school environment perceptions explained an equal or greater amount of variance than did either the demographic and prior achievement measures on adolescents' eighth-grade motivational beliefs.

The strongest predictor of adolescents' eighth-grade self-concept of academic ability was their self-perceptions of academic ability from the year before. In terms of the school perception measures, perceptions of positive teacher regard, provisions for autonomy at school, and a school task goal structure were significant, positive predictors of academic self-concept at the end of eighth grade. For educational values, results showed that perceptions of positive teacher regard and adolescents' prior values concerning education were the strongest predictors of their educational values at the end of eighth grade. The more adolescents perceived that their teachers thought they were good students, the more their valuing of school increased over time. Perceptions of a school emphasis on effort and improvement (school task goal structure) also predicted increases in educational values

<sup>4</sup>It is important to note that the analyses in this article assume that individual outcomes are a function of individual perceptions of the school experience (see Andersen, 1982):

Individual Outcome =  $f$  (Individual's Perception of School + Individual's Background Characteristics).

We also tested an alternative notion that individual outcomes are the function of aggregate characteristics of the school environment as measured by aggregated student perception data:

Individual Outcome =  $f$  (Average Perception of School + Individual's Background Characteristics).

We found no significant predictive relations in any of the regressions based on this second approach to assessing the school predictors of school outcomes. In other work we have also looked at the predictive contribution of "objective" school characteristics such as aggregate school achievement, size, and SES. These effects were very small when ordinary least squares regression techniques were used (Roeser, 1996).

TABLE 4  
Standardized Regression Coefficients for Eighth-Grade Academic Motivational Outcomes

Predictors	Eighth-Grade Academic Motivation					
	Academic Self-Concept			Valuing of Education		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Demographics						
Prior academic ability	.29**	.18**	.15**	.26**	.20**	.11**
SES	-.02	-.04	-.03	.07*	-.05	-.04
Race	-.06	-.03	.00	.01	-.09*	-.02
Gender	-.01	.00	-.05	.02	.17**	.09**
Prior adjustment						
Academic self-concept T1		.41**	.34**	.45**	—	—
Valuing of education T1		—	—	—	.29**	.22**
School perceptions						
Student autonomy			.08*	.20**		.04
School ability goal structure			-.02	-.15**		-.08**
School task goal structure			.07*	.19**		.15**
Positive teacher regard			.21**	.37**		.22**
r <sup>2</sup> change	.07	.15	.07	.07	.08	.11
F change	15.17**	147.55**	19.23**	14.54**	72.45**	29.33**
Total adjusted r <sup>2</sup>	.07	.22	.29	.07	.15	.26

Note. Gender was coded 1 (male), 2 (female); race was coded 1 (African American), 2 (White). Prior academic ability was a composite measure of adolescents' total scores on the California Achievement Test during third and fifth grades.  $r$  = the bivariate correlation of the predictor with the outcome measure; T1 = seventh grade measure; SES = socioeconomic status; dashes indicate that measure was not included in the analyses.  
\* $p$  ≤ .05. \*\* $p$  ≤ .01.

TABLE 5  
Standardized Regression Coefficients for Eighth-Grade Academic Behavioral Outcomes

Predictors	Eighth-Grade Academic Behavior							
	Academic Grade Point Average			Skipping Classes or School				
	Step 1	Step 2	Step 3	r	Step 1	Step 2	Step 3	r
Demographics								
Prior academic ability	.35*	.13**	.13**	.49**	-.07	-.04	-.11**	
SES	.19*	.05*	.06**	.34**	-.08*	-.07	-.11**	
Race	.15**	.09**	.10**	.29**	-.02	-.03	-.06	
Gender	.26**	.09**	.07**	.30**	-.06	-.01	-.07*	
Prior adjustment								
Grade point average T1		.65**	.61**	.78**	—	—	—	
Skipping classes or school T1		—	—	—	.19**	.16**	.19**	
School perceptions								
Student autonomy			.00	.10**		-.06	-.12**	
School ability goal structure			-.07**	-.23**		.16**	.22**	
School task goal structure			.05*	.09**		.01	-.10**	
Positive teacher regard			.08**	.36**		-.16**	-.25**	
r <sup>2</sup> change	.36	.28	.02	.02	.03	.07		
F change	104.82**	579.88**	11.28**	4.20**	27.83**	14.69**		
Total adjusted r <sup>2</sup>	.35	.63	.65	.02	.05	.11		

Note. Gender was coded 1 (male), 2 (female); race was coded 1 (African American), 2 (White). Prior academic ability was a composite measure of adolescents' total scores on the California Achievement Test during third and fifth grades.  $r$  = bivariate correlation of the predictor with the outcome measure; T1 = seventh grade measures; SES = socioeconomic status; dashes indicate that measure was not included in the analyses.

\* $p \leq .05$ . \*\* $p \leq .01$ .

TABLE 6  
Standardized Regression Coefficients for Eighth-Grade Psychological Adjustment Outcomes

Predictors	Eighth-Grade Psychological Adjustment											
	Self-Esteem			Anger			Depressive Symptoms					
	Step 1	Step 2	Step 3	r	Step 1	Step 2	Step 3	r	Step 1	Step 2	Step 3	r
Demographics												
Prior academic ability	.11**	.07**	.04	.06**	-.12**	-.10**	-.09**	-.18**	-.21**	-.13**	-.21**	
SES	.00	.01	.01	.01	-.07	-.04	-.04	-.14**	-.02	-.02	-.09**	
Race	-.12**	-.12**	-.11**	-.10**	-.09*	-.06	-.06	-.14**	.01	.03	-.01	-.05
Gender	-.14**	-.06*	-.10**	-.13**	-.05	-.03	.00	-.06*	.02	.00	.07*	.00
Prior adjustment												
Self-esteem T1		.49**	.46**	.51**	—	—	—	—	—	—	—	—
Anger T1		—	—	—	.40**	.35**	.42**	—	—	—	—	—
Depressive symptoms T1		—	—	—	—	—	—	.35**	.29**	.36**	—	—
School perceptions												
Student autonomy			.03	.10**		.07	.07	-.01		-.06	-.18**	
School ability goal structure			-.11**	-.20**		.20**	.29**			.15**	.28**	
School task goal structure			-.03	.10**		-.01	-.07*			-.07*	-.20**	
Positive teacher regard			.13**	.21**		-.11**	-.23**			-.26**	-.39**	
r <sup>2</sup> change	.04	.24	.03	.05	.15	.06	.06	.12	.05	.12	.14	
F change	7.08**	248.09**	9.06**	9.15**	145.74**	14.96**	9.28**	105.59**	38.56**	38.56**		
Total adjusted r <sup>2</sup>	.03	.27	.30	.04	.20	.25	.04	.16	.30			

Note. Gender was coded 1 (male), 2 (female); race was coded 1 (African American), 2 (White). Prior academic ability was a composite measure of adolescents' total scores on the California Achievement Test during third and fifth grades.  $r$  = bivariate correlation of the predictor with the outcome measure; T1 = seventh grade measures; SES = socioeconomic status; dashes indicate that measure was not included in the analyses.

\* $p \leq .05$ . \*\* $p \leq .01$ .

over time, whereas a perceived emphasis on competition and relative ability in school (school ability goal structure) had a negative effect on change in these beliefs over time.

*Predicting change in academic behavior over time.* Table 5 presents the hierarchical regression results for the academic behavioral outcomes at the end of eighth grade. Overall, the models accounted for 65% of the variance in adolescents' academic GPA and 11% of the variance in adolescents' self-reports of school truancy. The school perception measures accounted for only a small part of the explained variance (2%) in eighth-grade GPA after the demographic, prior achievement measures, and prior GPA measures were included in the analyses. In contrast, adolescents' school perceptions accounted for almost one half of the explained variance in their self-reports of skipping classes or school during eighth grade.

For year-end achievement in eighth grade (GPA), the strongest predictor was adolescents' end-of-the-year GPA in seventh grade ( $\beta = .61, p < .001$ ). Being from a relatively wealthier family, being White or a girl, and having a history of high achievement on standardized tests during elementary school were also positive predictors of final GPA in eighth grade. The relations of the school perception measures with eighth-grade GPA were small in the presence of these other measures. Both perceived positive teacher regard and a school task goal structure had small positive relations with eighth-grade GPA, whereas a perceived school ability goal focus had a small negative relation to year-end grades.

A different pattern of results emerged in the prediction of skipping classes or school. Although adolescents' reports of school truancy during seventh grade was predictive of their skipping classes or school during eighth grade ( $\beta = .16; p < .01$ ), adolescents' perceptions that their teachers thought they were good students ( $\beta = -.20; p < .01$ ) and a perceived school ability goal structure ( $\beta = .16; p < .01$ ) also significantly predicted school truancy during eighth grade. Perceptions of positive regard predicted a decline in school truancy over time, whereas perceptions of school ability goal structure predicted an increase in such behavior over time. Together, these two school perceptions accounted for more of the variance in skipping class or school during eighth grade than the demographic, prior achievement, and prior truancy measures combined. The total amount of variance explained in this outcome was modest, however (adjusted  $r^2 = .11$ ).

*Predicting change in psychological adjustment over time.* Regression results for the psychological adjustment outcomes are presented in Table 6.

Between 25 to 30% of the variance in self-esteem, anger, and depressive symptoms was accounted for in these models. In each case, adolescents' perceptions of their school accounted for approximately as much variance in these outcomes as did the demographic and prior achievement measures. In the case of depressive symptoms, the school measures contributed as much explanatory variance as did the prior measure of depressive symptoms assessed during the beginning of seventh grade.

In terms of relative predictive power, the strongest predictors of each of the psychological adjustment outcomes during eighth grade were the same adjustment measures assessed during the beginning of seventh grade. For instance, prior self-esteem was the best predictor of self-esteem at the end of eighth grade ( $\beta = -.48; p < .01$ ). Being a girl, White, and perceiving a school ability goal structure were predictive of negative changes in esteem over time, whereas perceiving positive teacher regard was predictive of positive change in esteem over time. Similarly, the strongest single predictors for anger and depressive symptoms at the end of eighth grade were anger ( $\beta = .35; p < .01$ ) and depressive symptoms ( $\beta = .29; p < .01$ ) at the beginning of seventh grade, respectively. However, adolescents' perceptions of their school environment also explained significant amounts of variance after accounting for the other variables in the model. Specifically, positive teacher regard was significantly predictive of declines in depressive symptoms and anger over time. In addition, greater perceptions of an emphasis on improvement, effort, and task mastery in school (school task goal structure) were associated with declines in depressive symptoms over time. Finally, to the extent that adolescents perceived their school as competitive, favoring high achievers, and giving up on some students (school ability goal structure), they also reported increased anger and depressive symptoms from seventh to eighth grade after controlling for the other variables in the model.

## DISCUSSION

The major goal of this study was to draw attention to the developmental significance of school for adolescents' academic and psychological functioning. We focused first on mean-level changes in adolescents' academic and psychological functioning through the middle school years in an effort to extend previous research that documented negative changes in school motivation, achievement, and psychological well-being during the transition into secondary school (Eccles & Midgley, 1989; Eccles et al., 1984; Simmons & Blyth, 1987). Furthermore, we were interested in how adolescents' reports of their middle school environment predicted change in their

academic and psychological functioning after this transition during the subsequent years of middle school.

### Individual Adjustment: Patterns and Change

In the first part of the study, we examined relations among and patterns of change in adolescents' school functioning, conduct, and psychological adjustment. Previous research on adolescent adjustment in high school samples focused on the cooccurrence of behaviors such as poor grades, drinking, drug use, nonvirginity, deviance, and low church attendance. This research suggested substantial clustering of risk behaviors in older adolescents (Donovan & Jessor, 1985; Dryfoos, 1990). In this study, we examined motivational, emotional, and behavioral indicators of adjustment among adolescents in middle school. We found that poor self-perceptions of academic competence and low valuing of school were associated with poorer achievement, school truancy, anger, and depressive feelings at both seventh and eighth grade. Poor psychological adjustment was also related to increased school truancy and decreased academic performance at both grades. These findings are suggestive of clusters of motivational and emotional indicators that may underlie different behavioral manifestations of risk in adolescence. Poor school motivation and poor psychological adjustment in early adolescence may set the stage for the later emergence of behavioral problems, though more longitudinal research is needed to assess the causal directionality of these associations over time (see Dryfoos, 1990; Eccles, Lord, et al., 1997). Studies that focus on both psychological and behavioral risk factors will eventually increase our understanding of broad patterns of adaptive and maladaptive functioning during adolescence (Masten et al., 1995), increase our understanding of cognitive-motivational-emotional linkages (Kovacs, 1989), and provide important information for preventative services aimed at clusters of risk factors (Eccles et al., 1996; Jessor, 1993).

We also examined change in young adolescents' school functioning, conduct, and psychological well-being from the beginning of seventh until the end of eighth grade. Previous research has documented that young adolescents' beliefs about their academic abilities and the value of education grow more negative across the transition into junior high school (Eccles et al., 1989; Wigfield & Eccles, 1994). In this study, we extend this work into the middle school years by showing that these beliefs continue to decline across seventh and eighth grade. We also noted an increase in skipping classes or school from seventh to eighth grade, a finding noted in other research (Dryfoos, 1990), and found a significant increase in the frequency

of angry feelings. At the same time, we found that self-esteem increased during these years. Again, this has been noted in other research reports: Self-esteem declines around the transition to secondary school and then rebounds for most individuals as they progress through secondary school (e.g., Eccles, Lord, et al., 1997; Nottlemann, 1987; Wigfield et al., 1991).

The changes noted in school and psychological adjustment in this study are most likely the result of several developmental and contextual factors associated with the early adolescent period. First, the physical and social changes associated with early adolescence, coupled with adolescents' increased self-awareness, result in changes in the affective composition of daily life. Thus, these years are marked by both more positive and more negative affective states, including anger or depressive affect (Larson & Ham, 1993; Larson & Lampman-Petratis, 1989). Second, entry into middle school marks significant changes in the social, instructional, and organizational features of school. As the findings of this study demonstrate, the secondary school environment is often at odds with the developmental needs of young adolescents, leading to declines in their school motivation, performance, and well-being (Eccles & Midgley, 1989). Finally, the determinants of self-esteem may change during these years. We found that adolescents showed improving self-esteem across the course of this study, perhaps indicating their adjustment to the demands of this period (e.g., Nottlemann, 1987). It may also be the case that things other than academics (such as friendships) accounted for the rise in self-esteem; we found both declining school engagement and increases in self-esteem during these years. Although we did not examine this specifically in this study, one wonders if some adolescents begin to rely heavily on arenas other than school, such as the peer group, to garner self-esteem as they encounter school environments that are less facilitative of their developmental needs (Eccles et al., 1996; Eckert, 1995).

### School Perceptions and Adjustment Over Time

In the second part of the study, we examined how adolescents' reports of their middle school experience and environment were related to changes in their adjustment over time as they progressed through middle school. Educational researchers have hypothesized that students in general and young adolescents in particular are in need of academic environments that emphasize high expectations for all students, a focus on self-improvement and effort rather than social comparison and competition, and opportunities for student choice and participation (Deci & Ryan, 1985; Eccles & Midgley, 1989; Maehr & Midgley, 1991). Each of these aspects of the middle

school environment are thought to support adolescents' needs and thereby their engagement in learning, achievement, and psychological well-being. For the most part, findings from this study supported these hypotheses.

Adolescents who perceived that their teachers thought they were good students in eighth grade showed positive changes in their feelings of academic competence, educational values, and self-esteem; and declines in their feelings of anger or depressed mood from seventh to eighth grade. Perceptions of positive teacher regard were also related to less school truancy during the years when such behavior is known to increase in frequency (Dryfoos, 1990). These results support the notion that adolescents' relationships with their middle school teachers can be important for their academic and psychological adjustment (e.g., Carnegie Council on Adolescent Development, 1989; Eccles, Midgley, et al., 1993; Ryan et al., 1994). Middle level schools can facilitate successful adolescent development by instructing teachers to base high expectations and regard for students upon effort and improvement rather than superior ability, and by structuring environments in such a manner so as to allow teachers to get to know each student (Carnegie Council, 1989).

As predicted, adolescents' perceptions of autonomy provisions in school are related to an increase in their sense of academic competence over time. However, contrary to our predictions, such perceptions did not show significant relations with other indicators of school and psychological adjustment in the multivariate analyses. Given the significant bivariate relations between autonomy support and these other indicators (e.g., self-esteem, depressive symptoms, and academic values), it appears that some of the explanatory power of adolescents' perceptions of autonomy in school is redundant with that of their perceptions of positive teacher regard and a school task goal structure resulting in attenuated relations in the multivariate analyses. Support for this interpretation comes from research and theory within the achievement goal tradition. Researchers working within this tradition have suggested that provisions for autonomy, choice, and opportunities for students to participate in their learning are important components of a larger constellation of practices that create task-oriented learning environments (Ames, 1992; Maehr & Midgley, 1991). Alternatively, it could be that our measure did not adequately tap provisions for autonomy and student participation, or that this variable operates at the level of specific classrooms whereas we measured it in terms of general middle school experience. These factors may have been responsible for the lack of consistent, hypothesized relations. It is clear from other research at the classroom level that autonomy provisions in school, in addition to such provisions in the family, are important to adolescents' school engagement and psychological adjustment (e.g., Deci & Ryan, 1985; Eccles, Midgley, et al., 1993).

The goals for achievement that are emphasized through organizational and instructional practices in the school have also been hypothesized to relate to adolescents' motivation, achievement, and well-being. Educational researchers have hypothesized that an emphasis on effort, improvement, and task mastery (school task goal structure) facilitates motivation, achievement and well-being, whereas a focus on social comparison and competition in schools (school ability goal structure) can undermine these developmental outcomes (Ames, 1992; Eccles & Midgley, 1989; Elias, 1989; Maehr & Midgley, 1991). These hypotheses have been borne out in empirical investigations of perceived school goal structures and academic outcomes (see Maehr & Fyans, 1989; Roeser et al., 1996), but the findings reported here extend this work to psychological adjustment outcomes and change in outcomes over time.

As expected, we found that a perceived school task goal structure predicts increases in adolescents' feelings of competence, school grades, and beliefs in the value of school as a pathway to later life opportunities. Such perceptions are also associated with decreased symptoms of depression over time. Is it the case that a task-oriented learning environment relates not only to adaptive patterns of motivation and learning but also to psychological well-being? Do environments that help youth focus on improving their abilities, becoming absorbed in the material, and exerting effort as the most important goals of learning during a time of identity exploration and self-consciousness lead to healthy patterns of school motivation and mental health? There are good theoretical reasons to think this may be the case (e.g., Ames, 1992; Covington, 1992; Dweck & Leggett, 1988; Maehr & Midgley, 1996), but the findings reported here lend only modest support to this prediction. Future research needs to examine this finding more closely with other sources of data on the school environment (e.g., teacher or principal reports) and other samples of adolescents.

The associations found between adolescents' perceptions of a school ability goal structure and their adjustment were stronger than those found for perceptions of a school task goal structure. A focus on competition and social comparison during early adolescence has been hypothesized to be particularly detrimental to adolescents' well-being (Eccles & Midgley, 1989). Our results supported this notion: To the extent that adolescents perceived their middle school as competitive, as giving up on some students, and as favoring high achievers with special privileges, they also showed declines in their valuing of school, academic grades, and self-esteem; and in increases in skipping school from seventh to eighth grade, and in their feelings of anger and sadness. Although we cannot be certain of the causal direction of these relations, it is plausible to suggest that a focus on

comparison and competition in middle school is psychologically uncomfortable for many adolescents; is at odds with their need for a safe, supportive environment to develop their competencies, and thus undermines their feelings of commitment to school and feelings of personal well-being (Covington, 1992; Eccles & Midgley, 1989; Maehr & Midgley, 1991). Not all students can be the smartest or the brightest and not all adolescents are motivated to attain such goals. Such an emphasis on competition may cause some adolescents to feel bad, disidentify with school, or leave the environment by skipping school or class.

Given the rather ubiquitous use of social comparison and competition in school as a motivational device (see Elias, 1989; Midgley et al., 1995), a question that often arises concerns whether or not there may be some benefit of a competitive achievement setting or a combination of ability and task goal structures in schools. Different patterns of motivational goal structures undoubtedly exist in many classrooms and schools today. Unfortunately, to date, few studies have looked at how different students react to different goal structures or at how different patterns of emphases on task and ability goals in schools influence student outcomes. At this point, much of the main effects research that has been done on ability-goal structures at the school level has shown modest, negative relations with academic and psychological outcomes (Maehr & Fyans, 1989; Roeser et al., 1996; Urdan & Roeser, 1993). However, this evidence is somewhat preliminary in terms of documenting clear school effects. Exploring (a) differences between schools on measures of goal structures, (b) the relation of such between-school variation to student outcomes, and (c) the specific linkages between school practices and student perceptions of goal structures are three areas of research that would clarify the nature of a school ability goal structure on adolescents' development.

That being said, what is clear is that adolescents' perceptions of a school ability goal structure are related to most of the risk factors described in the high-risk lifestyles that so many youth are vulnerable to entering into today (Dryfoos, 1990). Furthermore, it is clear that many practices common in schools today either implicitly or explicitly promote an ability goal structure. This includes differential learning opportunities (e.g., tracks, ability groups), differential teacher expectations, recognition and reward practices based on relative ability, and competitive academic activities and school fairs. It is important for school reformers to consider the motivational consequences of these different practices when formulating reform strategies aimed at enhancing students' motivation, behavior, and psychological well-being (Eccles et al., 1996; Maehr & Midgley, 1996).

### Locating and Assessing the Effects of Middle School

Two conceptual issues related to this study are important to note. First, for those interested in the developmental significance of schooling, one needs to decide which level of analysis (e.g., classroom, academic track, school as a whole) to focus on when assessing adolescents' school experience. In middle schools, students change classes several times a day; they are often sorted into class sequences in different academic programs ("tracks"); and they may not remain with the same group of peers across different classes. We focused on adolescents' general impressions of middle school as one way to deal with this complexity. However, other levels of the secondary school environment are also important to study. For instance, in their junior high school study, Eccles, Midgley et al. (1993) focused on students' transition from elementary school classrooms to math classrooms in junior high school and chose to focus on the role of classroom-level experiences in relation to student motivation and achievement. Other researchers have argued that schools as a whole represent a relevant unit of analysis in that schools have climates that are related to but distinct from classroom climates that affect students (see Andersen, 1982; Maehr, 1991; Maehr & Midgley, 1991; Rutter, 1980). Finally, understanding the norms, values, and opportunity provisions associated with different academic tracks and the relation of these factors to students' motivation, behavior, and adjustment is another fruitful area of inquiry and one that is likely to be more relevant as students progress in school and are sorted into different types of opportunity structures (Oakes, Gamoran, & Page, 1992).

A second issue involves the use of students' subjective perceptions of the school environment versus the use of more objective instructional or organizational characteristics drawn from teachers, principals, or observations as a way to assess school context. Including student perceptions is useful for understanding the functional significance of school to the adolescent and posits a meaning-making student who actively constructs his or her experience of school at the psychological level (Deci & Ryan, 1985; Maehr, 1991; Ryan & Grolnick, 1986). However, the use of student perceptions to understand the impact of schooling is an incomplete method. It is also important to delineate the specific organizational, administrative, instructional, and interpersonal processes occurring in schools that give rise to student perceptions. Only in this way can generalization from individual experience to aspects of the school ecology be made and utilized by those interested in school reforms (e.g., Andersen, 1982; Morrison, 1982).



### Limitations and Conclusion

The results of this study suggest that adolescents' experience in middle schools does make a difference in their school functioning. In addition, our results suggest that it may be time to investigate more thoroughly just how such experiences make a difference for adolescents' social-emotional functioning as well (Eccles et al., 1996; Good & Weinstein, 1986). However, generalization from these findings to inferring school effects per se must be made with caution (Andersen, 1982). Findings and implications of this study would be strengthened by further research that (a) utilized multiple sources of information on the school environment (informants, teachers, principals) and multiple methodologies (interviews, observations, surveys), (b) focused on between-school differences in climate variables (e.g., goal structures) and their relation to student outcomes, and (c) used analysis techniques that incorporated both school-level characteristics (honor rolls, differential treatment policies, aggregate expectations, etc.) and individual perceptions such as those examined in this study simultaneously (e.g., Bryk & Raudenbush, 1992; Rutter, 1980). We are currently addressing several of these issues in our ongoing research program (Eccles & Sameroff, 1998). Finally, the school perception and adolescent adjustment measures were both collected during the same time period in eighth grade. Studies in which data are collected at different time points during a school year would improve our ability to make causal inferences concerning the relations between perceptions of school and adolescent adjustment, such as were examined in this study.

In conclusion, we know that as youth move from the primary to the secondary level of schooling, schools are increasingly less supportive and less rewarding for many of them (Eccles & Midgley, 1989; Midgley, 1993). We also know that adolescents who fail to graduate from school more often than not say that a lack of opportunities for success at school, low teacher expectations, and low social support from teachers and administrators were the most important reasons for their decision to leave school (Fine, 1991; Wehlage & Rutter, 1986). Without substantial reforms in our nation's secondary schools, such as the creation of smaller, caring communities of learning that facilitate student-teacher relationships, empower students to make decisions and participate in learning, and emphasize improvement, effort, and the ability of all students to learn, the positive influence that schools could have on the lives of adolescents may not be fully realized (Carnegie Council, 1989; Eccles, Midgley, et al., 1993).

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