

DOCUMENT RESUME

ED 362 322

PS 021 802

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 TITLE School Engagement & Students at Risk.
 INSTITUTION National Center for Education Statistics (ED),
 Washington, DC.
 REPORT NO NCES-93-470
 PUB DATE Aug 93
 NOTE 117p.
 PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC05 Plus Postage.
 DESCRIPTORS *Academic Achievement; Academic Failure; *Class
 Activities; Elementary Education; *Elementary School
 Students; Grade 8; *High Risk Students; Longitudinal
 Studies; National Surveys; Public Schools; *School
 Activities; Student Behavior; *Student
 Participation
 IDENTIFIERS *National Education Longitudinal Study 1988

ABSTRACT

I examine the proposition that students who do not remain active participants in class or school may be at risk for school failure, regardless of status characteristics such as ethnicity or family income, two studies of engagement and achievement were conducted. The studies used a nationwide sample of eighth-grade students from the U.S. Department of Education's National Educational Longitudinal Study of 1988 (NELS:88) survey. The first study examined the association of participation in school and classroom activities with academic achievement in 15,737 eighth-graders attending public schools. The study found that participation and academic achievement were positively related, even after controlling for gender, ethnicity, and socioeconomic status. The second study examined behaviors that distinguish students who are at risk, but who are successful in school subjects, from their less successful peers. A sample of 5,945 eighth-graders identified as at risk by virtue of race, home language or socioeconomic status were classified as unsuccessful, passing, or successful, based on reading and mathematics achievement tests. It was found that achievement groups were distinct in terms of variety of classroom participation behaviors, out-of-class participation, and interactions with their parents regarding school. Three major conclusions were drawn from the investigation: (1) behavioral risk factors are indeed related to significant outcomes of schooling; (2) risk behaviors have their roots in the early school years or before; and (3) more attention should be given by educators and researchers to encouraging the potential of "marginal" students. Further research is needed to identify manipulable aspects of classroom and school processes that encourage student engagement. Appendices provide details of the measures used in the studies and the standard deviations and correlations of the measures. Contains 91 references. (MDM)

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School Engagement & Students At Risk

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August 1993

This work was performed while the author was an American Statistical Association/National Science Foundation Fellow at the National Center for Education Statistics (NCES). The author is grateful to the staff at NCES for facilitating access to the data used in the investigation, to Maria Owings and Kristin Voelkl for assistance with the data analysis, and to Nancy Karweit, Marilyn McMillen, and Russel Rumberger for thoughtful reviews of an earlier draft of this paper. The results and interpretations in this report are those of the author alone and do not reflect findings or policies of NCES.

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Overview

This investigation examines the role of *engagement* or *involvement* in school as it relates to student achievement. A model of engagement is forwarded that has a behavioral component termed *participation* and a psychological component termed *identification*. These are viewed as elements of a cycle that begins in the primary grades for most children with basic forms of participation, that is, attending school, attending to the teacher, and responding to teachers' directions, questions, and assignments. These behaviors--the focus of the present investigation--remain important throughout the school years. Under favorable circumstances, they are likely to persist, to become elaborated, and to be accompanied by a sense of belonging in school and valuing school-related outcomes, that is, identification.

On the other hand, the proposition is forwarded that if a youngster does not remain an active participant in class and in school, he/she may be at risk for school failure regardless of the risk that may be implied by status characteristics such as race/ethnicity, home language, or family income. In contrast to the latter *status risk factors*, participatory behaviors comprise a set of *behavioral risk factors* that may be more amenable to manipulation through school and home processes.

Two studies of engagement and achievement were conducted using a nationwide sample of eighth-grade students from the U.S. Department of Education's NELS:88 survey. Both studies focused on measures of participation constructed from student, parent, and teacher questionnaires. These included indicators of youngsters' attendance, participation in the classroom, as well as participation in school-relevant activities outside the regular program. Study II also included several indicators of youngsters' identification with school that were available from the data set.

Study I examined the association of participation in school and classroom activities with academic achievement in a sample of 15,737 eighth-grade students attending public schools. Students were classified according to the number of participation dimensions, out of

3, on which they were low or "inadequate." Differences among the participation groups on achievement tests were large and statistically significant, even after controlling for gender, race/ethnicity, and socioeconomic status. The absence of significant interactions confirmed that the association of these behavioral risk factors with achievement is found for four racial/ethnic groups (Asian; Hispanic; African-American; non-Hispanic White) and both sex groups alike.

Study II was an examination of the behaviors that distinguish students who are at risk, but who are successful in school subjects, from their less successful peers. The premise is tested that these groups differ in terms of their participation in school and classroom activities. A subsample of 5945 eighth graders who would be identified as at risk by virtue of race, home language, or socioeconomic status were classified as unsuccessful, passing, or successful based on reading and mathematics achievement tests. Achievement groups were distinct in terms of a variety of classroom participation behaviors, out-of-class participation, and interactions with their parents regarding school. Differences among the groups in terms of youngsters' identification with school were explored as well.

Three major conclusions were drawn from the investigation, and one recommendation for continued research. First (1) behavioral risk factors are indeed related to significant outcomes of schooling even within racial/ethnic, socioeconomic, or language groups. Engagement behaviors are more amenable to influence than traditional status indicators and should become the focus of educators and researchers. Second (2) risk behaviors have their roots in the early school years, or before. They should be identified at the earliest age possible in order to maximize the likelihood that positive school outcomes will be realized. Early and persistent efforts should be made to promote participation among youngsters who are "noninvolved" in the primary grades. Third (3) students whose achievement may be termed "marginal" exhibit behaviors much like those of successful students. It is important that their accomplishments, although not extraordinary, should be recognized in order to promote and sustain these youngsters' involvement in school.

Research is needed to identify manipulable aspects of classroom and school processes that encourage student engagement. This research should focus on the early years; it should examine factors that affect the perseverance of engagement behaviors; it should focus on the engagement or disengagement of individual students in contrast to groups. Correlational evidence is needed on the relationships of school and class features with participation and identification. Intervention studies should assess the effects of *early assessment* and *persistent reinforcement* of participation on both the short-term and long-term involvement of students at risk.

Acknowledgments

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Introduction

In a broad sense, the purpose of this investigation is to increase our understanding of the nature of educational risk. It is an examination of two sets of attributes that may place a child at risk for educational difficulties; these are referred to as *status risk factors* and *behavioral risk factors*, respectively. Status risk factors are demographic and historical characteristics, often used to classify large groups of individuals, that are difficult or impossible to alter. With regard to educational outcomes, status risk factors are such easily identified characteristics as racial or ethnic origin, socioeconomic conditions of the home, or the primary language of the home. Because these background characteristics are related to a family's place of residence, children with high risk status may also be living in a neighborhood where the school does not provide adequate learning opportunities.

Behavioral risk factors are a set of behaviors that, if not manifested by a youngster, reduce the likelihood that successful school outcomes will be realized. In the earliest grades, these include such basic behaviors as attending school, arriving at class on time, paying attention to a teacher, and completing assigned work. These behaviors continue to be important throughout the grades. As students' autonomy increases with age, however, the set may expand to include a wider variety of activities related to both the academic and extracurricular programs of the school. The full set of behaviors may be referred to as "participation" in school. A youngster is at risk for school failure if he or she does not sustain participation in the school's academic program, at the least. In contrast to status risk factors, participation may be more easily modified by school programs, staff, and parents, to increase the likelihood that the individual will succeed in his or her school experience.

This investigation examines the relationship of both sets of risk factors to the academic achievement of eighth-grade public school students. Students' self reports and teachers' behavior ratings are incorporated into several indexes of engagement. Study I asks whether participation is related to academic achievement for a nationwide sample of youngsters, and whether this relationship 'holds up' when the effects of status characteristics

(i.e., race and SES) are controlled statistically. Study II examines the behavior of just those youngsters who are at risk for school problems by traditional status characteristics, that is, minority students attending inner-city schools, students from low-income families, and students whose primary language at home is not English. Within this group, many individuals are somewhat successful and some highly successful in terms of academic outcomes. Study II asks whether these students are distinguished from their less successful peers in the extent to which they participate or are engaged in their schools' academic programs.

Two fundamental assumptions underlie this research. The first is expressed in the preceding paragraphs: The educational risk status of a student may be described in terms of static characteristics that are difficult or impossible to alter, and also in terms of a set of behaviors that may be more amenable to influence by parents, school personnel, and school programs.

Second, involvement in learning activities or its obverse, emotional or physical withdrawal, is a developmental process that may begin in the earliest years of school. Active participation in the early grades, accompanied by some degree of academic success, serves to perpetuate continued participation throughout the school years. Under optimal conditions, engagement becomes the individual's *habitual* form of behavior.

Unfortunately, some pupils may begin the primary grades lacking the predisposition to participate in class activities. Others may find school experiences distasteful, especially if they feel "put down" or mistreated by their teachers, and may begin to retreat from participation. These youngsters are already at risk for later failure and further withdrawal from school. This perspective is reflected in Rumberger's (1987) observation that "dropping out itself might better viewed as a process of disengagement from school, perhaps for either social or academic reasons" (p. 111). Intervention is needed long before the high-school student with low grades decides that "school doesn't matter" or to leave school without graduating. Unfortunately, once this point has been reached, the grades and labels that

accompany them (e.g. "failure;" "dropout") become additional status characteristics that are more difficult to surmount.

Status and Behavioral Risk Factors¹

The concepts of risk status and risk factors have been used widely in medical fields prior to their relatively recent adoption into education. Health risk factors are defined in the *Final Report of the Risk Factor Update Project* (Breslow et al., 1985):

Certain events, conditions, and behaviors in the life of any individual modify the probability of occurrence of death or disease for that individual when compared to others of the same age and sex in the general population. For many of these variables, which we may collectively term "risk indicators," a predictive relationship exists between levels of the risk indicators and incidence of disease and death. (p. I-1)

If "school failure" or "dropping out" is substituted for "death" or "disease," and "risk factors" for "risk indicators" then the parallel is obvious.

Medical researchers recognize three fundamental principles associated with risk that may also be useful in examining educational process. First (1) the risk factors germane to a particular outcome comprise both status characteristics common to certain population groups as well as individual habits and behaviors. For example, with regard to cardiovascular disease, the major cause of adult mortality in the United States, Bush et al. (1991) write:

Several risk factors for cardiovascular disease (CVD) have been identified in clinical and epidemiological studies. Some of these risk factors cannot be altered, such as gender, ethnicity, family history, and aging, but others are modifiable by changes in

¹A more extensive discussion of "The Meanings of At-Risk" is given by Placier (1991).

lifestyle. These include obesity, hypertension, hypercholesterolemia, cigarette smoking, and lack of exercise. (p. 447)

Second (2) individual risk behaviors "track," that is, they have early forms that evolve into fully developed forms over time. Berenson (1986) argues for the analysis of early forms of risk (e.g., mild obesity in childhood) in spite of the difficulties posed by long-term studies: "The level of tracking is of major importance because of the potential to identify individuals at high risk at an *early age* when intervention might conceivably alter the course of disease" (p. 21; emphasis added). With regard to cardiovascular disease:

Causal factors in children are even more difficult to find than in adults. In this case we are one step further back in searching for determinants of cardiovascular risk, largely because of the lack of identifiable clinical endpoints. This should not diminish in any way the significance of understanding the determinants of cardiovascular risk as they begin...since determinants are apt to be less confounded by the complexity of disease that accumulates with time. (Berenson, 1986, p. 3)

Likewise in education it is essential that we learn to identify and understand early forms of students' disengagement from school. The longer dysfunctional behavior patterns are allowed to continue, the more difficult they will be to overcome.

The third principle (3) is the *clustering* of risk factors, that is, the occurrence in the same individual of multiple risk factors. For example, "obesity has a close relationship with blood pressure levels in children...(and) with serum lipids and lipoproteins" (Berenson, 1986, p. 21). When the latter three factors are controlled for body fatness, their interrelationships are reduced substantially. Results of this analysis

[P]roject the tremendous significance obesity may have for cardiovascular disease beginning in early life. Clustering appears to occur with increasing age of children, suggesting a greater impact of environmental factors. (Berenson, 1986, p. 21)

The clustering of educational risk factors may be inevitable for many youngsters because early educational *outcomes* become part of the cluster that is predictive of later outcomes. For example, academic performance at one grade correlates strongly with performance in subsequent grades, at least partially because learning is cumulative. But it is also the case that multiple behavior problems tend to co-occur in the same individuals. In reviewing research on behavior problems related to schooling, Finn (1989) notes, "It is a pervasive feature...that every discussion of dropping out, attendance problems, disruptive behavior, or delinquency refers to the interdependencies among them" (p. 118). And, as might be expected, all of these are associated with poor academic performance.

Engagement as a Behavioral Risk Factor

Recent years have seen the implementation of many dropout prevention programs that attempt to increase students' engagement in school, whether in the academic, vocational or extracurricular and social spheres. Reflecting this emphasis, Wehlage et al.'s (1989) overview of research on dropouts uses the words "participation," "engagement" and "involvement" 216 times in a 260-page volume and presents a theory of dropout prevention in which "Educational engagement and school membership comprise the central concepts" (p. 192). In spite of this emphasis, there have been very few efforts to define and study the constructs represented by these terms formally.

Engagement in school may be viewed behaviorally--that is, whether a student participates regularly in classroom and school activities--or affectively--whether a student feels that he/she 'belongs' in the school setting and values school-relevant outcomes. The present investigation focuses primarily on the more behavioral dimension, *participation*. Nevertheless the affective component is an integral part of the process by which participation (or nonparticipation) is perpetuated and may lead ultimately to such long-term consequences as truancy, dropping out, or even juvenile delinquency. A developmental model that includes this component is described following the discussion of participation alone.

Participation may take different and more elaborated forms as a youngster progresses through the grades. Finn (1989) proposes a four-part taxonomy:

Participation in the primary grades may be little more than a youngster's acquiescing to the need to attend, be prepared, and respond to directions or questions initiated by the teacher; even this *level-one participation* may be resisted by some. As children mature, they may take more active roles, above and beyond the degree of involvement that is required. (p. 128)

Level-one participation remains essential to learning throughout the school years; the primary focus of this investigation is on level-one participation among a sample of eighth-grade youngsters.

Many students go on to display initiative-taking behavior as well:

At a second level of participation, students initiate questions and dialogue with the teacher and display enthusiasm by their expenditure of extra time in the classroom before, during, or after school, or by doing more classwork or homework than is required. For some students, this enthusiasm eventually expands into participation in subject-related clubs, community activities...and the like. (p. 128)

"Help-seeking behavior" is an important set of initiative-taking behaviors for students having academic difficulty. Once viewed as a kind of dependency that would arise from insufficient development and socialization (Beller, 1955) help seeking is seen more recently as "a mature, and even sophisticated, strategy for coping with difficult tasks...actively using available human resources to increase success" (Nelson-LeGall & Jones, 1991, p. 30). The decision to seek help in a particular situation may depend both on the youngster--for example, his or her awareness of a learning problem, and the desire to overcome it--and on the response of the helper as well as classmates on other occasions.

The opportunity for a third level of participation increases with age:

Many students participate in the social, extracurricular, and athletic aspects of school life in addition to, or at times in place of, extensive participation in academic work.

(Finn, 1989, p. 128)

The fourth level of participation is only possible in some schools but has been advocated, particularly for youngsters at risk:

Participation in governance...at least as it affects the individual student. This may involve academic goal-setting and decision-making and a role in regulating the school's disciplinary system. (p. 129)

The present investigation focuses on the relationship of level-one participation with the school performance of eighth-grade students. The failure to participate in class activities, and the display of behaviors that prevent participation, are termed *nonparticipation*. Before presenting the results of the analysis, the following sections address two questions: (1) Is there existing evidence that nonparticipation is predictive of adverse outcomes, in this case school failure or dropping out? And (2) what are the mechanisms by which early forms of nonparticipation cluster and evolve into later forms that precipitate such adverse consequences?

Is participation predictive of school performance? Research on the association of participation with school achievement has been summarized in several recent reports (Finn 1989; Finn & Cox, 1992). In the elementary grades, such simple behaviors such as paying attention and responding to teachers' directions are closely linked with school performance (Attwell, Orpet, & Meyers, 1967; Cobb, 1972; Good & Beckerman, 1978; Lahaderne, 1968). In addition, achievement benefits are found consistently when students do more than the required work (Fincham, Hokoda, & Sanders, 1989; McKinney, Mason, Perkerson, & Clifford, 1975; Swift & Spivack, 1969). The initiative-taking behaviors include undertaking

'extra credit' assignments, using the additional resources available in the classroom (e.g., dictionary or encyclopedia), and initiating discussions with the teacher about school subjects.

Finn and Pannozzo (1992) examined two types of behavior that may detract from learning, inattentive or withdrawn behavior and disruptive behavior, respectively. The behavior of over 1000 grade-4 youngsters was rated by their teachers on a 26-item rating scale. Children who are inattentive generally sit in less visible locations in the classroom, avoid interacting with the teacher, and give inappropriate responses when called upon. In contrast, disruptive youngsters create disturbances that interfere with other youngsters' work or with the teacher's efforts to manage the classroom. Both sets of behaviors were found to be significantly associated with impaired academic achievement in all areas. While disruptive behavior is more salient and evokes stronger responses from teachers, inattentive and withdrawn youngsters had even lower achievement levels than those who were disruptive.

Several studies related youngsters' behavior to academic outcomes several years later. For example, Attwell, Orpet, and Meyers (1967) found significant correlations between ratings of youngsters' attention in kindergarten and achievement test scores in six areas in grade 5. Perry, Guidubaldi, and Kehle (1979) found that kindergarten teacher ratings of the factor "Interest-Participation versus Apathy-Withdrawal" was significantly correlated with reading and mathematics test scores in grade 3. And Fincham, Hokoda, and Sanders (1989) found that third grade teachers' reports of youngsters' "learned helplessness" behaviors were related to standardized reading and mathematics scores in grade 5. At least half of the learned helplessness items reflect the youngster's class participation, for example, "Takes little independent initiative" or "Gives up when you correct him/her or find a mistake in his/her work."

The same behaviors--responding to the requirements of class and teacher, and taking an initiative with school work--continue to be related to achievement in the junior high and high school years (Anderson, 1975; Kerr, Zigmond, Schaeffer, & Brown, 1986). Laffey

(1982) investigated involvement of a sample of urban high school sophomores with their school work. Commendably, the study included questionnaire responses from the students themselves, systematic classroom observations, cued responses from the teachers and students about their activities, and data from school and class records. Significant differences were found between basic and advanced classes on a number of measures including days absent and the teachers' ratings of students' "involvement with the class, considering both the amount of participation and the intensity or energy with which a student engaged in activities" (p. 64). Both of these variables, plus teachers' ratings of the extent to which assignments were completed and the involvement responses given on cue by the students, were significantly related to achievement test scores.

A major longitudinal study relating early school behaviors to later school and non-school outcomes was reported by Spivack and Cianci (1987). The investigators assessed youngsters' "ability to adapt" during the primary years, that is, "the child's ability to control and regulate his or her own behavior and thinking, ability to attend and work independently, and ability to comprehend and become involved in the learning process" (p. 45). The study began with a random sample of 660 inner-city children who entered kindergarten in the fall of 1968. The children's behavior was rated by their teachers in kindergarten through grades 3 on a 47-item checklist that resulted in 11 factors: classroom disturbance; impatience; disrespect-defiance; external blame; achievement anxiety; external reliance; comprehension; inattentive-withdrawn; irrelevant responsiveness; creative initiative; needs closeness. About 500 of the youngsters remained in the study in 1975 at which time data were gathered on school misconduct and delinquency. A single "conduct disturbance" score was obtained for each adolescent by combining teacher ratings of the youngster's "(1) over-emotionality and quickness to anger or upset, (2) uncooperativeness, disobedience, or disruptiveness, and (3) assaultiveness and quarrelsomeness" (p. 56).

The study revealed a consistent pattern of significant association between behavior in the early grades and all of the later outcomes. With regard to school conduct disturbance, the dominant predictors were early classroom disturbance, impatience, and disrespect-

defiance, followed by irrelevant responsiveness, external blame, and inattentive-withdrawn. The authors conclude, "Within this high-risk cohort, children of both sexes between the ages of 5 and 8 who exhibit poor control or regulation of their cognitive and behavioral patterns are especially at risk" (p. 61). The authors also examined the chronicity of early behavior patterns by isolating those youngsters who had elevated scores at both kindergarten and grade three on 3 or more factors. Chronicity was significantly related to classroom misconduct during adolescence for females but not for males, leading to the conclusion that "high risk as measured by total aberrance pattern at either point in time warrants concern in males, and that high-risk pattern at both points in time adds nothing significant predictively to such a fact" (p. 65).

Attendance is a particularly important participatory behavior throughout the school years because non-attendance prevents the youngster from being exposed to learning activities and to other efforts to promote his or her involvement. While younger children have little choice but to attend school and to sit in the classroom, as pupils progress through the grades they can choose to miss classes or, in the extreme, not show up at school at all. Absences have been found to be detrimental to academic achievement and school grades generally (deJung & Duckworth, 1986; Weitzman et al., 1985) while Lloyd (1974; 1978) found that absences as early as grade 6 were related to dropping out of school. Further, nonattendance has been found to be related both to disruptive behavior in the classroom and to juvenile delinquency (Reid, 1984; Rutter et al., 1979). These findings emphasize the powerful role that absenteeism plays in the "clustering" of risk factors in each successive school year.

Fewer data are available on the relationship of higher levels of participation in the four-part taxonomy with school performance. Indeed, many students participate in the social, extracurricular, and athletic aspects of school life in addition to, or at times in place of, extensive participation in academic work. Ekstrom et al. (1986) found that dropouts had participated less in extracurricular activities than their non-dropout peers. Holland and Andre (1987), in a review of research on extracurricular participation, note that the

correlational nature of most of the research does not permit causal inferences. The authors state:

We believe that participation has effects because of what happens as a result of participation...[P]articipation may lead students to acquire new skills (organizational, planning, time-management, etc.), to develop or strengthen particular attitudes (discipline, motivation), or to receive social rewards that influence personality characteristics. (p. 447)

Holland and Andre (1987) note also that there is more participation in extracurricular activities in schools with smaller enrollments, especially among students from lower socioeconomic homes.

Formal research on the association of student decision-making with academic performance or school completion is virtually nonexistent. It is clear, however, that students who withdraw from participation in school often complain that the evaluation and reward structure of school is incompatible with their interests and abilities (Natriello, 1984) and that disciplinary procedures are unfair or ineffective (Gold and Mann, 1984; Newmann, 1981; Wehlage and Rutter, 1986).

How does participation track and cluster? Scholars in several disciplines have described developmental sequences in which early school experiences coalesce into a pattern of dysfunctional behavior in later grades. For example, juvenile delinquency has been explained in these terms. Bernstein and Rulo (1976) describe a cycle whereby undiagnosed learning problems, followed by embarrassment and frustration over failing grades, may lead a youngster to exhibit increasingly inappropriate and disruptive behavior. Since adult attention is more likely to focus on the behavior than the learning difficulty, the child "falls farther and farther behind and becomes more of a problem. Eventually, the child is suspended, drops out, or is thrown out of school, and the movement toward delinquency is well under way" (p. 44).

Bloom has argued more broadly that mental health develops as a child receives continual evidence of his/her adequacy through school-related success experiences. A history of good grades and positive interactions with teachers may "provide a type of immunization against mental illness for an indefinite period of time" (Bloom, 1976, p. 158). However,

At the other extreme are the bottom third of the students who have been given consistent evidence of their inadequacy...over a period of 5 to 10 years. ...We would expect such students to be infected with emotional difficulties [and to] exhibit symptoms of acute distress and alienation from the world of school and adults. (Bloom, 1976, p. 158)

Still others have written about the importance of youngsters' *bonding* with school at an early age. For example, in the Perry Preschool Project (Berrueta-Clement et al., 1984) three- and four-year-old black youngsters at risk for school failure were randomly assigned to an intensive preschool program or to a no-preschool control group. The children were followed to age 19 by which point the groups differed significantly on measures of school performance, graduation and dropout rates, employment, personal-social characteristics, and detentions and arrests by the police. The impressive findings of this study were attributed in part to "bonding" of the preschool children with school:

On the basis of these internal and external factors, social bonds develop between persons and settings in the course of human development. Strong social bonds to conventional settings, such as school, are seen as making delinquency less likely (Berrueta-Clement et al., 1984, p. 3).

The authors identify an important internal factor as "commitment to schooling" and an external factor as "student role reinforcement." Differences were found between the experimental and control groups on measures of both constructs.

The connection between bonding and behavior is a basic component of "social control theory" (see, for example, Hirschi, 1969; Liska & Reed, 1985). The underlying assumption is "that ties (...links, attachments, binds, and bonds) to conventional institutions function to control or inhibit the behavioral expression of deviant motivation" (Liska & Reed, 1985, p. 547). When these bonds are weakened, the individual is free to engage in deviant behavior. This view of student behavior has a distinctly negativistic tone--that is, it implies that youngsters would exhibit all sorts of dysfunctional behavior if they were not prevented from doing so by attachments to traditional institutions such as the family, church, or school.

These perspectives have three features in common. First (1) they all emphasize that patterns of behavior have their roots in the early school years or before. Adverse outcomes such as failing grades, dropping out, or even juvenile delinquency cannot be completely understood by examining attitudes or events in a single year, especially if it is late in the individual's school career. Second (2) they all emphasize the importance of some degree of positive reinforcement from the *institution* in perpetuating appropriate behavior. And third (3) they indicate that the developmental sequence leading to engagement or involvement on the one hand, or to disengagement or withdrawal on the other, has both behavioral and psychological components. The behavioral component may take the form of working (or not working) for good grades, participating (or not participating) in the academic and/or extracurricular parts of the school program, or channeling one's energies away from (or into) disruptive behavior. The psychological component involves positive affect for some youngsters (e.g., mental health; commitment; bonding) and negative for others (e.g., frustration and embarrassment; distress and alienation).

That withdrawal behavior has its origins prior to the last years of school is confirmed by Popp (1991) in interviews with 34 adult high school dropouts. Thirty-one of the respondents reported that they had not been actively involved in academics or extracurricular activities since the late elementary or middle school grades and that the sense of alienation from school continued through young adulthood.

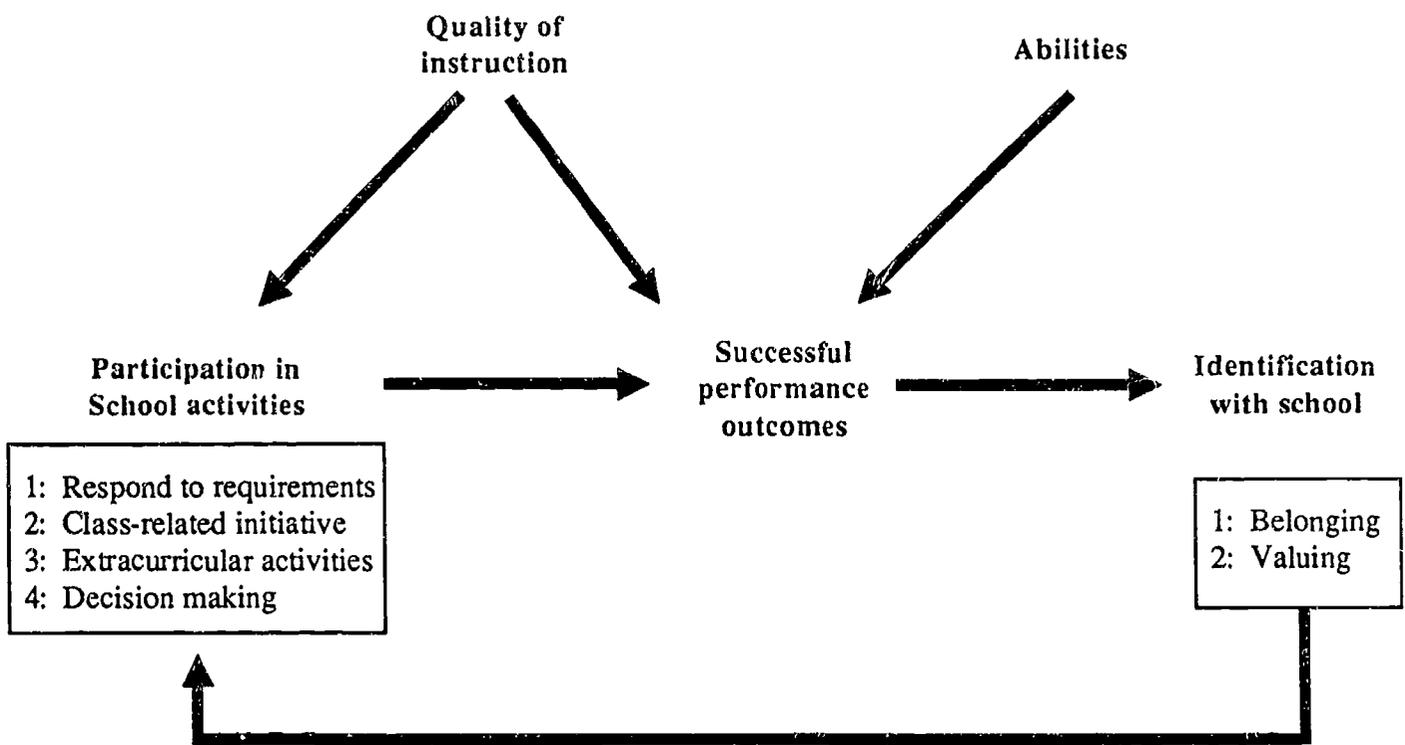


Figure 1. Participation-Identification Model

A model of student engagement. The three features described in the preceding section have been incorporated into the participation-identification model of school engagement (Finn, 1989). According to this formulation engagement (or, synonymously, involvement) in school has two primary components (see Figure 1).

The first is the extent to which the youngster participates in school and classroom activities in any of the ways described in earlier sections of this paper. Participation in the classroom is fundamental because young children who may not have developed strong emotional ties or aversions to school may still be willing participants. For most, their participation in classroom activities is encouraged by parents, teachers, and the instructional activities themselves. The present investigation is based on a sample of eighth graders instead of young children and focuses on indicators of basic forms of participation as reported by the students and by their teachers.

The second component is termed *identification*. Identification occurs (a) when students internalize the feeling that they "belong" in school--both that they are a conspicuous part of the school environment and that school is an important part of their own experience--and (b) when they value success in school-related accomplishments. Wehlage et al. (1989) give a prominent role to a similar construct, "school membership," in their theory of dropout prevention.

The participation-identification model describes a developmental sequence that begins with classroom participation in the primary grades. Most youngsters begin school willing to respond to the teacher and to participate in learning activities. As long as early participation is accompanied by some rewards for success, a sense of comfort or "belonging" can develop and become internalized. The influence of performance rewards plus the increased identification with school serve to perpetuate youngsters' active participation in the classroom and the school environment generally.

Unfortunately for some this cycle is either *not initiated* or is *curtailed* before participation becomes the usual mode of behavior. Some youngsters may begin school predisposed to nonparticipation. They are inattentive and avoid the teacher's attention or engage in disruptive behavior as an alternative to constructive class work. If this pattern continues over the years, low or failing grades and emotional disengagement, rather than identification, may follow. The youngster may exhibit an increasing number of inappropriate or defiant behaviors, making it still less likely that he or she will ever become "involved."

Others may be discouraged by dysfunctional interactions with their teachers or with the larger school environment. In class, teachers' lower expectations for minority pupils or for those whose achievement is initially low may cause them to provide fewer interactions with these youngsters and fewer opportunities for performance to increase (Baron, Tom, & Cooper, 1985; Kagan, 1990).

There is also an extensive literature about school practices that, if not accommodating to the needs of high-risk students, can alienate those having academic or behavioral difficulties. School regulations and disciplinary practices have come under scrutiny in particular. On the one hand, the effective schools research indicates clearly that an orderly school environment are important to both student engagement and learning (Purkey & Smith, 1983). At the same time, it is also important that disciplinary policies be seen as fair and effective (Bryk & Thum, 1989; Wehlage & Rutter, 1986) and school rules as flexible and able to accommodate to the needs of particular students (Gold & Mann, 1984; Miller, Leinhardt, & Zigmond, 1988; Richardson, Casanova, Placier, & Guilfoyle, 1989). Wehlage, Smith, and Lipman (1992) summarized the results of three years of the "New Futures Initiative" to improve the life chances of youngsters at risk through school restructuring. The authors conclude that, in spite of administrators and teachers' best intentions, few meaningful changes occurred that would affect student membership. The restructured schools were still characterized by "highly punitive discipline policies, an overemphasis on control, and frequent adversarial relations between students and teachers" (Wehlage, Smith, & Lipman, 1992, p. 85). If youngsters perceive that their teachers are disinterested or

hostile and that school practices are putative and alienating, then continuous participation in curricular activities--not to mention identification with school--cannot reasonably be expected to occur.

The present investigation examines the relationship of engagement with academic achievement in a large cross-sectional sample of eighth-grade pupils, and addresses the specific question "do these behaviors explain why some high-risk students are more successful than others?" In spite of the obvious importance of a youngster's emotional engagement in school, few measures of school membership and little research on the topic have emerged.² A notable exception is the work of Goodenow (1992; in press) who developed and validated a self-report measure of school membership appropriate for adolescents. Among her findings, Goodenow (in press) reported that school membership was significantly related to teachers' reports of the youngsters "effort" in English classes, that is, classroom participation. In contrast, valuing school-relevant outcomes has been shown to be related both to school engagement and academic performance (Eccles, 1983; Pintrich & DeGroot, 1990).

While this analysis focuses on basic forms of student participation in class, three indicators of identification were also obtained from the data base. Two of these reflect the student's sense of "belonging" (perceived warmth and supportiveness of the school staff; students' views of how they are perceived by fellow students) and one reflects the extent to which the student values school-related achievements (perceived usefulness of school subjects in later life). The number of times students have changed schools is considered as a mediating variable since a high degree of school mobility may preclude the youngster identifying with school even under the best of conditions.

²There has been a good deal of research on "alienation" which is perhaps the obverse of school membership. According to Seeman (1975) the essential components of alienation are powerlessness, meaninglessness, normlessness, self-estrangement, social isolation, and cultural estrangement. These concepts are all viewed in the negative and thus give little direction to those who may wish to promote desirable behavior.

What Psychological Processes Motivate Nonparticipation?

The research examined in the preceding sections of this paper shows that disengagement from school may have its roots in the primary grades or earlier. The participation-identification model describes a sequence of events through which early forms of nonparticipation are maintained through the years and may become elaborated into more severe forms such as truancy or dropping out. *Whether or not these events transpire*, an individual's behavior in later grades may be the consequence of a deeply embedded set of needs and beliefs that continue to evoke nonproductive work habits.

Nonparticipatory behaviors can be described as (a) failing to take advantage of constructive strategies for learning, or else (b) engaging in negative behaviors that impede learning. These classes of behavior have been studied extensively in the form of learned helplessness and self-handicapping, respectively.

Learned helplessness can result when a person discovers repeatedly that the outcomes of a situation are not within his/her control (see Abramson, Seligman, & Teasdale, 1978; Kofta & Sedek, 1989). The feelings of frustration and helplessness that ensue may generalize to other situations in which effort could possibly promote success:

It is perceived incompetency along with certainty about such perceptions that causes the anxiety, despair, and pessimism about future success that characterize the learned helplessness phenomenon. (Covington & Omelich, 1985, p. 448)

The individual is truly helpless in the initial situations, comes to perceive himself/herself as not possessing whatever strategies are needed to achieve future positive outcomes, and fails to exert even minimal effort in other similar situations. He/she has "learned" that there is no point in trying and engages in "failure-accepting behavior."

The initial experiences set the stage for all that follows. A basic assumption behind the concept of learned helplessness is that individuals behave in a manner that will provide them with a "sense of predictability and control over their environment" (Fiske & Taylor, 1984, p. 100). When individuals discover that they do not have control over a situation they may respond in a number of ways including "reactance," that is, attempts to regain control, and feelings of helplessness. If the expectation of control in the initial situations was weak or if loss-of-control experiences occur repeatedly, then learned helplessness is a more likely outcome.

Maier and Seligman (1976) contend that learned helplessness creates three deficits. One is the lack of *motivation* to make further attempts to succeed in similar situations; this deficit may be manifested as disengagement from class and school activities. The *cognitive* deficit occurs because these individuals fail to practice and learn strategies that could help them succeed in the future. The *emotional* deficit is the feeling of depression that accompanies powerlessness and which may accentuate disengagement still further. An individual's self-esteem may also be affected by the feeling of powerlessness, but not necessarily so if one is able to invoke other mechanisms in defense of his/her self-view.

That the initial conditions for learned helplessness can occur readily among high-risk children in school is obvious. If a youngster arrives at school without the prerequisite readiness skills, if primary teachers are not able to match instruction to the starting levels of the less-prepared pupils, or if lower grades are awarded to students whose temperament is displeasing or to minorities regardless of their desire to achieve, then failure may be inevitable and perceived to be beyond one's control. Younger children often believe that success comes from effort (Nicholls, 1978, 1979, 1989) but if effort is applied inappropriately or if it is just not rewarded, it will not produce the expected outcome. This pattern, repeated often enough, can only lead to a feeling of powerlessness. The youngster may experience both emotional and physical withdrawal and stop "trying" even when productive learning strategies are available.

In contrast to learned helplessness, *self-handicapping* in the face of uncertainty about success "involves creating obstacles to one's own performance for the sake of attributional benefits" (Tice & Baumeister, 1990, p. 447). Confronted with many early failures and doubt about future success, "they reason that if they cannot avoid failure, at least they can avoid the implication of failure--that they lack the ability--by not trying or by creating excuses for why their efforts were futile" (Covington & Omelich, 1985, p. 447), that is, they exhibit "failure-avoiding behavior."

Self-handicapping individuals engage in behaviors that are detrimental to achievement, for example, procrastination, giving inappropriate priority to non-school activities, and exhibiting disruptive behavior to draw time and attention away from academic tasks. These activities become "excuses." If the youngster succeeds at the tasks that follow, both the perception of high ability and his/her self-esteem are maintained and even strengthened. If the youngster fails, self-esteem can still be maintained because the causes of failure are obscured and attributed to factors other than ability.

The basic premise underlying the concept of self-handicapping is that individuals seek to protect their sense of self-worth (Tesser, 1988; Tice & Baumeister, 1990). At about nine years of age, youngsters begin to attribute performance differences to "ability" rather than effort (Nicholls, 1978, 1979, 1989). Thus, self-handicapping behavior safeguards self-esteem by allowing the individual to maintain the perception that he/she has the ability to do the required work. The perception of control may also be maintained because "The perception of ability is a precondition to a sense of one's own control...One does not attribute [control] ...to the self for an action one believes one cannot do" (Fiske & Taylor, 1984, p. 103). Unfortunately, the "excuses" substitute for more productive expenditures of energy and represent the individual's failure to assume responsibility for his/her own performance.

Sequelae. The consequences of failing to use positive learning strategies or of engaging in behaviors that detract from learning are much the same. *Both result in the*

further reduction of constructive effort applied to academic tasks. Both increase the likelihood of further school failure which may have been the very same condition that produced these behaviors in the first place. Both increase the likelihood that the youngster will disengage from school and classes over subsequent years. And both may be exhibited by the same individuals. For example, well-intended primary-grade children who experience failure may employ strategies to preserve a positive self-view in the middle years but eventually give in to despair and dysfunctional behavior in later grades.

Failing to use positive learning strategies and engaging in behaviors that detract both have their roots lie in early school experience. We are reminded again that this is when they may be most amenable to change, before a history of failing grades is accumulated, before youngsters comes to believe that only ability will produce success and that they don't have what it takes, and before nonparticipation becomes habitual. Among the eighth-grade students in the present investigation, this critical period is already in the past.

Two Studies of Engagement and Achievement

This investigation of student engagement and disengagement comprises two studies conducted from a single data base. Study I asks the simpler question "Is there an association between engagement and academic achievement?" using data from a nationwide sample of eighth-grade public school students. Study II focuses on just those students who are at risk according to traditional status definitions, that is, minorities attending inner-city schools, students from low-income large families, and youngsters whose home language is not English. Among this group, a subgroup is identified whose academic performance is "acceptable" and another group whose performance is high. The investigation asks whether these two groups are distinguished from their less successful peers by their engagement behaviors in school. The sections that follow describe the data base and variables that were common to both studies.

Subjects

Data for the investigation were drawn from the files of the National Educational Longitudinal Study of 1988 (NELS:88). NELS:88 is a major longitudinal study designed to document the experiences of a nationwide sample of eighth grade students until they are well beyond the high school years. Although NELS:88 is designed as a longitudinal investigation, the wealth of data obtained at each time point provides important information for researchers and policymakers as well. This investigation is a cross-sectional analysis of base-year results, that is, data collected on students enrolled in eighth grade in 1988.

Subjects for the NELS:88 sample were selected through a two-stage stratified probability sampling design (see Spencer et al., 1990, for a complete description of sampling procedures). At the first stage, about 800 public and 200 private schools were selected that enrolled grade 8 pupils. At the second stage, an average of 24 eighth grade students were selected from each school, resulting in a total sample size of about 24,500 youngsters.

Both studies were conducted using data on those students attending public schools. After eliminating a small number of individuals for whom no test scores or school data were available, and those enrolled in special education programs, the resulting sample size was 18,307. These youngsters represent a cross section of eighth graders from all regions of the United States from four racial-ethnic groups: Asian or Pacific Islander; Hispanic, regardless of race; Black, not of Hispanic origin; White, not of Hispanic origin. There was not a sufficient number of American Indians or Alaskan Natives to include this group in the present analysis.

Study I was conducted using the entire data set, eliminating cases that were missing key variables for any particular analysis. Study II was conducted on a subsample of about 6,000 youngsters who could be considered "at risk" according to the criteria given in the study description below.

Measures

To a large extent, the two studies used the same or similar measures. These were drawn from all of the instruments administered in the NELS:88 survey, that is, surveys and achievement tests administered to the students, and surveys of parents, school administrators, and teachers. Significant attention was given--both by the NELS:88 staff and in the present study--to selecting the most reliable indicators of each variable assessed. For example, if both parent and student data were available regarding socioeconomic status (e.g., parents' education or occupation) the parents' data were used by NELS:88 researchers. In the present study, since two teacher ratings of individual students were available for most youngsters, the average of these was used instead of a single rating. In addition, a number of composite variables were formed--both by the NELS:88 staff and in the present investigation--since composites of closely related items are generally more reliable than responses to the individual items themselves.

The NELS:88 survey provided an index of socioeconomic status (SES) for each participant. This was obtained by combining information on the father's educational attainment, the mother's educational attainment, the father's occupation, the mother's occupation, and household income. Occupational data were coded using the Duncan SEI scale (Duncan, 1961). Each component was standardized and the five standard scores were averaged to yield the final SES composite. Socioeconomic status was used in Study I as a covariate and in Study II as one criterion for the selection of the at-risk subsample.

The NELS:88 achievement tests in reading comprehension, mathematics, science, and history/citizenship/geography were used in Study I as the primary outcome variables. The mathematics and reading subtests were used in Study II to classify youngsters into performance levels. The tests were constructed specifically for the NELS survey by Educational Testing Service; the items were based on the consensus of committees of subject matter specialists. Coefficient alpha reliabilities for the tests are .84, .90, .75, and .83, respectively. Further information about the test battery is available in Rock et al. (1990).

A brief description of the items and composites created just for this investigation is given below; more detailed information on each composite is given in Appendix A.

Classroom and School Academic Participation:

The six variables in this set constituted the primary measures of pupil participation in the classroom and academic program of the school. Three were obtained from the Student Questionnaire and three by averaging the average ratings of two of the student's teachers.

ATTENDANCE - Student's report of number of times missed school, skipped classes, arrived late, and number of times his/her parents were contacted about attendance problems.

PREPARATION - Student's report of number of times he/she came to class without pencil and paper, without books, and without homework completed.

BEHAVIOR - Student's report of number of times sent to office for misbehaving, parents received a warning about the pupil's behavior, and pupil getting into a fight with another student.

ABS-TARDY - Teachers' reports of whether the pupil is frequently absent from class or tardy.

WITHDRAWN - Teachers' reports of whether the pupil is exceptionally passive or withdrawn.

NOT-ENGAGED - Teachers' reports of whether the student rarely completes homework, is inattentive in class, and is frequently disruptive.

Identification with School:

This set of measures reflects the student's feelings of belonging in the school environment and the extent to which the student values school subjects as being important in his/her future years.

MOVES - The parent's report of the number of times the eighth grader has changed schools over the preceding years.

STU-TEACHER - The student's report about whether students get along well with teachers at this school, whether there is "real school spirit," whether teachers are interested in students, praise the student's effort, listen to what the student says, or whether the student feels "put down" by his/her teachers.

PERCEPTIONS - The student's assessment of whether students in the class see him/her as popular, athletic, a good student, and "important."

UTILITY - The student's agreement with the statement "Math will be useful in my future" and the same statement regarding English, social studies, and science.

Participation Outside the Regular School Program:

Five variables reflect the extent to which the student participates in academic and non-academic school-related activities that are beyond the regular school hours.

HOMEWORK - Student's report of the number of hours spent on homework per week, considering all subjects.

EXTCURR - Total number of extracurricular activities in which the student reports participating, from a checklist of 21 activities.

READING - The amount of reading the student reports doing on his/her own (not required by school), from none to 6 hours or more per week.

DIS-COUNSELOR - The student's report of discussing program plans, academic problems, and course topics with his/her school counselor.

DIS-OTHER - The student's report of discussing program plans, academic problems, and course topics with teachers or relatives and friends other than parents.

Parent Involvement in Student's School Work:

Four variables indicate the extent to which parents and their youngsters interact with regard to school work. These measures reflect both the pupil's involvement with school work when at home and the extent to which parents encourage and support the youngster's active participation in school.

CHK-HOMEWORK - The student's report of how often his/her parents check on whether homework has been completed.

DISCUSS - The student's report of the frequency with which school programs, activities, and topics studied are discussed with parents, and whether he/she talks with parents about planning a high school program.

PAR-TALK - The parent's report of the frequency with which parents talk to the student about school experiences and high school and post high school plans.

RESOURCES - The student's report about whether his/her home has a specific place to study, a daily newspaper, magazines, an encyclopedia, an atlas, a dictionary, and a typewriter.

Parents' Involvement:

Two variables reflect the extent to which parents have direct contacts with the youngster's school.

PAR-CONTACTS - The parent's report of the frequency with which the parents contacted the school to discuss the student's academic performance or academic program.

PAR-INVOLVE - The parent's report of whether the parents belonged, attended, or participated in the school's parent-teacher organization, volunteered to assist in school, or belonged to an out-of-school parents' group.

Statistical Analysis

The primary data analysis for both studies consisted of comparisons of group means using analysis of variance and covariance techniques. In Study I the total sample of eighth graders was classified by gender, race, and into one of four participation groups (highly engaged; middle-high; middle-low; not engaged). The dependent variables were measures of academic performance. In Study II the subsample of at-risk youngsters was classified by gender, race, and achievement level (successful; passing; unsuccessful). The dependent variables were several sets of participation and identification measures.

In each study, three-way multivariate analysis of variance and covariance for unequal N 's was used to compare the means of the various subgroups on the dependent variables; all analyses were performed using the MULTIVARIANCE program (Finn & Bock, 1985). Each three-way analysis involved 7 multivariate tests of significance (3 main effects plus 4 interactions); under the null hypothesis these tests are statistically independent. If an overall

type I error rate of .05 is assumed, this is achieved by using an α -level of .0073 for each multivariate test.

A general-to-specific or "protected test" approach was taken in analyzing mean differences. First, when the MANOVA showed that overall differences among race, participation, and achievement groups were statistically significant, particular contrasts were tested in multivariate (Hotelling's T^2) form. For race/ethnic groups, comparisons were made between each of the minority populations and non-Hispanic Whites. For participation groups (Study I) orthogonal polynomial contrasts were used to determine if the association of achievement with participation was approximately linear, or nonlinear. For performance groups (Study II), unsuccessful students were compared with the average of passing and successful youngsters, and the mean for passing students was contrasted with that for successful students, respectively. Second, when a contrast was found to be significant for the multivariate set, the same difference was tested for each measure. In this way, the specific variables that distinguish particular groups are identified.

Effect sizes were also obtained for each contrast to indicate the magnitude of the difference. For each variable separately, these are the estimated differences between means divided by the pooled within-group standard deviation. For the multivariate set, a similar index is provided by Mahalanobis's D , the number of within-cell standard deviations on a line that separates the group mean vectors or "centroids" (see Harris, 1985, pp. 128, 168).

Other analysis considerations. Because of the sampling design employed by the NELS:88 survey, two additional elements were needed in the analysis. First, the sampling of students within schools introduced an "intra-class correlation" into the data. In brief, the deviations of individual students' scores from the mean of the entire sample are not all independent because students within a particular school are drawn from a relatively homogeneous population of individuals exposed to a common curriculum and a common set of school experiences. This problem was remedied in the present study by re-expressing all

students' scores on measured variables as deviations from the mean in their school, that is, schools were "held constant" before the data were analyzed.³

Second, the NELS:88 survey used a weighting procedure both to compensate for unequal probabilities of selection of students into the sample and to adjust for students who were selected but did not respond to the questionnaires and tests. The major factors considered in selecting schools were school type (public or private), geographic region, urbanicity, and percent minority. Different numbers of students were selected in each school, with 24 as the targeted N , depending primarily on the school size. In addition, particular subpopulations were oversampled (e.g., Asian and Hispanic students). Each student's data record is accompanied by a weight that is based on the inverse of the probability that he or she is selected into the sample. These values were used throughout the present analyses. Before each analysis was performed, the weights for the particular subsample were "normed" (multiplied by a constant) so that their sum was the appropriate within-school degrees of freedom ($N_{\text{students}} - N_{\text{schools}}$). As a result, the degrees of freedom are consistent with the computation of deviation scores described in the preceding paragraph.

A different approach to the sampling complexities was taken in the analysis of the cross-tabulations of achievement with other background and performance characteristics in Study II. The computer program SUDAAN (Research Triangle Institute, 1991) is written specifically to analyze data collected in a multistage weighted sampling design, using a "Taylor series" approach to computing appropriate standard errors (Lee, Forthofer, & Lorimor, 1989). The SUDAAN procedure CROSSTAB was used to obtain weighted row and column percentages and to estimate standard errors for a series of two-way contingency tables and to compute a chi-square test of independence for each pair of variables.

³As an alternative, a hierarchical linear model (HLM) approach may have been taken. However, it was not necessary in the present investigation because all of the variables in the analysis were measured at the student level.

Study I: Participation and Achievement

The primary question of Study I is straightforward: Is there a relationship between students' degree of participation in school-related activities and his/her academic achievement? To address this question, several participation measures were combined into a single four-point scale and youngsters were classified by this and by gender and race. Mean performance scores were compared through multivariate analysis of variance. The analysis examines the interactions of gender and race with participation as well as the participation main effect, that is, it will reveal whether the relationship is the same for males as for females and for all four racial/ethnic groups. As a follow-up, the analysis for Study I was repeated with the SES composite score as a "covariate" to determine if any differences were found could be attributed to differences among the groups in socioeconomic status.

Altogether, the investigation included 12 direct measures of student participation. Since some of the separate measures may not be highly reliable and because they reflect diverse aspects of student participation, the scales were combined into a single four-point participation index in two stages. First, factors were created based on principal component analyses of three sets of measures that represent three aspects of student participation. One reflects absenteeism and tardiness and is a weighted composite (first principal component) of student and teacher measures ATTENDANCE and ABS-TARDY, respectively. The second is a weighted composite of indicators of school-related activities and discussions outside of the regular program (HOMEWORK; EXTCURR; READING; DIS-COUNSELOR; DIS-OTHER; DISCUSS). The third is a weighted composite of three out of the original four classroom behavior indicators PREPARATION, BEHAVIOR, and NOT-ENGAGED. The fourth variable (WITHDRAWN), the teachers' reports of whether the pupil is exceptionally passive or withdrawn, did not contribute to this factor or to either of the others, nor did it seem to correlate with any outcome measure.

Next, each factor was dichotomized with a score of 0 indicating the preferred behavior and a score of 1 indicating poorer behavior. The attendance factor was

dichotomized with 78% of the sample in the preferred group and 22% in the "poorer" group because the distribution of scores was clearly bimodal with a break at this percentile point. Each of the other factors was dichotomized with 1/3 of the sample in the "poorer" group and 2/3 in the "preferred" group.

The three dichotomies were summed so that the final index ranges from 0 (high on all participation factors) to 3 (low on all three factors). The index can be viewed as the *number of participation dimensions on which an individual is deficient*. While many different strategies might have been taken in creating a composite index, this approach yielded four categories that allow us to examine nonlinear as well as linear associations with achievement and to focus on the extreme groups, particularly those at the lower end. The 1/3-2/3 cutoffs yielded "low" groups that were generally the size of those examined in other studies of inattentive or disruptive youngsters, that is, about 20% of the sample.

The distribution of participation levels by student race and gender is shown in Table 1. Because of the unique classification scheme used in this study, these (unweighted) values are not viewed as estimating a "true" distribution of participation in the population, but only as providing further information about the four categories that resulted.

Overall, 23% of the youngsters out of the total sample of 15,737 eighth-graders were classified as nonparticipants (17.8% + 5.2%). A greater percentage of females than males in the sample was classified as "participants," that is 82.7% of females as compared with 71.0% of males were in the *high* or *mid-high* participation groups. Among racial/ethnic groups, Asian students in the sample had the highest proportion in the high group alone and the highest total proportion of participants (high + mid-high). Hispanic students had the lowest proportion of participants and the highest proportion of individual in both the

Table 1

Distribution of Participation Levels by Race and Gender

Characteristic	Participation Group ^a				Percentage in "Low" Category				Total Number in Sample
	High (n=6506)	Mid-High (n=5606)	Mid-Low (n=2802)	Low (n=823)	Factor I: Attendance	Factor II: Extra Partic.	Factor III: Behavior		
Gender									
Male	32.4	38.6	22.5	6.5	20.1	38.1	44.9		7,693
Female	49.9	32.8	13.3	4.0	22.3	28.0	21.2		8,044
Race/Ethnicity									
Asian/ Pacific Islander	51.7	35.9	9.7	2.7	9.7	33.7	19.9		905
Hispanic	31.4	34.9	25.2	8.4	30.4	39.3	40.9		2,029
Black	34.3	38.2	22.2	5.3	25.9	27.1	45.7		1,964
White, not Hispanic	43.6	35.3	16.3	4.8	19.6	32.8	30.0		10,839
Total sample	41.3	35.6	17.8	5.2	21.2 ^b	33.0 ^b	32.8 ^b		15,737

^a All values are percentages; rows sum to 100 percent.

^b These percentages were fixed by the scaling procedure.

mid-low and low groups. While more Whites than Blacks in the sample were in the highest participation category, about equal proportions of Whites and Blacks were in the lowest classification.

Table 1 also gives the percentage of each group that was classified as low on each participation dimension. Although males and females differed very little in attendance, a higher percentage of males were in the low category on educational participation outside of school and a much higher percentage of males was characterized as having behavior problems.

These percentages, intended to give a clearer picture of the four participation groups formed from the sample, yielded some patterns that are worthy of further investigation in their own right. In particular, each racial/ethnic group appeared to have its own behavior profile. Asian students attended class and came on time regularly, were relatively well-behaved in school, but did not discuss school matters or engage in out-of-school activities to any greater degree than other groups. Hispanic and Black eighth-graders had poorer attendance records than non-Hispanic Whites, with Hispanics having the highest absenteeism/tardiness rates of all three groups. Hispanic students also had the lowest degree of participation outside the regular school program (39.3% "low") but were not the worst behaved in class. In contrast, Black students reported more out-of-school participation than Whites but had the greatest proportion who scored low in terms of classroom behavior (45.7%).

Table 2 gives additional information about the educational histories of students in the sample. In total, almost equal percentages of Asian and Hispanic students came from homes where English was not the primary language. In spite of this, Asian students had the highest participation rates and Hispanic students the lowest participation rates of the four racial/ethnic groups (Table 1). For all students combined, participation levels decreased monotonically as the proportion of non-English-speaking homes increased; this trend was

Table 2

Background Characteristics of Four Participation Groups

Characteristic	Participation Group				All
	High	Mid-High	Mid-Low	Low	
Percent language minority					
Asian/Pacific Islander	58.8	57.8	53.4	33.3 ^a	57.2
Hispanic	56.0	62.1	62.3	63.2	60.3
Black	4.9	4.0	4.0	6.7 ^a	4.7
White, not Hispanic	2.4	2.7	3.3	4.0	2.7
All	12.0	13.6	15.9	17.5	13.5
Percent in bilingual program	2.8	2.8	2.3	3.5	2.8
Percent who attended nursery or pre-school	57.1	50.0	44.8	39.2	51.7
Percent retained one or more grades	10.8	19.2	31.3	41.1	18.9
Mean number of school changes	1.15	1.35	1.56	1.76	1.32

^a Cell *n* is less than 10.

only seen clearly among Hispanics and to some extent among other White groups not of Hispanic origin (e.g., families from other European countries). A small percentage of youngsters in the sample was attending bilingual education classes (2.8%) but no clear relationship emerged between this and school participation.

Over half of the sample attended some form of nursery school or preschool. Participation levels decrease monotonically with decreased attendance in nursery or preschool. It is possible that these early experiences have increased youngsters' predispositions to remain engaged throughout their school years. The NELS:88 data and the present analysis, however, do not preclude other explanations. Among them, it is possible that parents who give the highest priorities to their children's education send them to school at the youngest age and also provide the resources and support at home that keep their youngsters involved and achieving. These hypotheses are certainly worthy of further investigation.

Overall, almost 19% of the youngsters in the sample had been retained one or more years prior to eighth grade, with retentions among the nonparticipants substantially higher than among participants. Likewise the number of times the youngsters changed schools was highest among the nonparticipants in the sample and lowest among the participants. Although no tests of significance of these trends were conducted, it is clear that the highest and lowest participant groups in the sample were quite distinct in terms of prior educational experiences, that is, nursery or preschool attendance, grade retentions and, to some extent, school mobility.

RESULTS

Table 3 summarizes the tests of significance for the three-way gender-x-race/ethnicity-x-participation design with four achievement tests as dependent variables. The results for gender and race/ethnicity provide a backdrop against which to view those for participation

Table 3**MANOVA Results for Achievement Measures**

Effect ^a	Multivariate Test ^b	Univariate Tests			
		Reading	Mathematics	Science	History
Gender	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$
Race	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$
Gender x Race	$p < .0001$	$p < .05$		$p < .05$	
Participation	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$
Gender x Participation				$p < .01$	$p < .01$
Race x Participation			$p < .001$	$p < .01$	
Gender x Race x Participation					

Note: Results indicated are those with p -values less than .05.

^a The nonorthogonal design required tests of significance in several orders (Finn & Bock, 1985). The results presented here were obtained as follows: Gender and Race were tested eliminating both other main effects; every other effect was tested eliminating all terms listed above it in the table.

^b Obtained from F -approximation from Wilks' likelihood ratio.

groups. The means for each gender and racial/ethnic group are given in Table 4 and mean differences in the form of "effect sizes" are shown in Table 5.

There are significant performance differences between males and females on the multivariate set of measures and for each measure individually. On the average, eighth-grade females perform better than eighth-grade males in reading by $.21\sigma$ (see Table 5) and more poorly than males in mathematics, science, and the composite history/citizenship/geography. There are also significant racial/ethnic differences overall and the multivariate contrast of each minority group with non-Hispanic white students is significant as well. On average, Asian students score better than whites in mathematics but do not differ significantly in any of the other three areas. Both Hispanic and Black students score significantly below non-Hispanic whites on every achievement measure. In the sample, Black students had the lowest average scores of the three minority groups. The significance of all gender and race effects remained at the same level when SES was controlled statistically.⁴

The gender-x-race interaction evident in the multivariate test is accompanied by significant univariate *F*-statistics for Reading and Science only. Separate interaction contrasts (not included in the tables) indicate that the interaction for Reading is between gender and the Hispanic-White difference. On average, non-Hispanic White males and females have higher reading scores than Hispanic males and females, and females of both racial/ethnic groups have higher scores than males. The significant interaction is obtained because the mean for White females is substantially higher than the means of the other three groups; the latter are fairly homogeneous in comparison. This effect is reduced to nonsignificance when SES is added to the model as a covariate.

⁴Because the analysis-of-covariance results with SES as a covariate were almost identical to the analysis-of-variance results, no separate tables were constructed.

Table 4**Subgroup Means of Achievement Measures**

Group	Variable			
	Reading	Mathematics	Science	History
Gender				
Male	-.342	.359	.360	.381
Female	.612	-.022	-.130	-.109
Race/Ethnicity				
Asian/Pacific Islander	.473	2.279	.729	.877
Hispanic	-.405	-1.118	-.432	-.580
Black	-.914	-1.922	-.963	-.878
White, not Hispanic	.370	.589	.333	.360
Participation				
High	1.374	2.293	1.039	1.300
Mid-high	-.218	-.292	-.109	-.079
Mid-low	-1.392	-2.689	-1.079	-1.449
Low	-2.166	-4.215	-1.832	-2.484

Table 5

Estimated Mean Difference Among Gender, Race/Ethnicity, and Participation Groups

Effect	Multivariate	Univariate ^b			
		Reading	Mathematics	Science	History
Gender (M-F)	.90***	-.21***	.30***	.42***	.37***
Race/Ethnicity					
Asian - White ^c	.51***	-.03	.37***	.12	.14
Hispanic - White ^c	.29***	-.20***	-.28***	-.24***	-.23***
Black - White ^c	.64***	-.52***	-.57***	-.57***	-.42***
Participation					
Linear Trend	.75***	-.60***	-.69***	-.58***	-.64***
Quadratic Trend	.09**	.08***	.08***	.06**	.05*
Cubic Trend	.03	.00-	.02	.00+	.02

Note: Significance indicated as follows: * $p < .05$; ** $p < .01$; *** $p < .001$.

^a Mahalanobis's *D*.

^b Least-squares estimate of mean difference in the unequal-*N* analysis of variance model, divided by the pooled within-cell standard deviation of the particular variable. Standard deviations are given in the Appendix.

^c Non-Hispanic White Students.

The interaction for Science is attributable to the Black-White contrast. Males of both races have higher average scores than females, and Whites of both sexes have higher average scores than Blacks. However, the gender difference for Black students is smaller than for Whites, with White males scoring substantially higher than all three other sex-race combinations. This effect remains significant at the .05 level when SES is controlled as a covariate.

Participation Group Differences

The four participation groups differed on the set of four achievement measures and on each scale separately. The achievement means (Table 4) decrease in all subject areas with reductions in class and school participation. Overall it is clear that the association of academic achievement with school engagement--as exhibited through attendance, classroom behavior and participation outside the regular program--is strong and consistent. These results (and the trend analysis described below) remained unchanged when SES was introduced as a covariate.

The trend analysis was conducted to determine if there was a simple (linear) or more complex relationship between achievement scores and the number of participation factors on which students scored "low;" the results are summarized in the bottom section of Table 5. Both the linear and quadratic trends are statistically significant for the multivariate set and for each achievement test. Least-squares "fitted means" (not given in the tables) were computed to give a more complete description of this effect, although the same pattern can be seen in the observed means of Table 4.

For each achievement test, the difference in performance between the high and mid-high participation groups is larger than the difference between the mid-high and mid-low groups; this in turn is larger than the difference between the mid-low and lowest participation group. In other words, larger increments in achievement are obtained at higher levels on the participation scale. Scoring high on 2 participation factors (compared with 1) is associated

with a larger achievement advantage than scoring high on 1 participation factor (compared with none). Scoring high on all 3 participation factors (as compared with 2) is associated with an achievement gain that is still larger. In negative terms, the mid-low and low participation groups--individuals whose engagement in class and school is minimal--are not as distinct as groups at the higher levels. Thus, while higher achievement is associated with increased participation at all points on the scale, it appears that the greatest achievement advantages are obtained by students who display most or all of the forms of participation assessed here, that is, attendance, positive classroom behavior, and school-related activities outside the regular program.

For the set of achievement measures as a whole, there is no interaction of race or gender with participation. That is, the association with participation with achievement is equally characteristic of males and females, and of Asian, Hispanic, Black, and non-Hispanic White students alike. Several univariate *F*-ratio's exceeded their critical values; these might simply be spurious findings given the large number of statistical tests that were conducted, but may also reflect small differences that are worthy of exploration in future studies. Two of these were for the interaction of gender with participation and two were for race and participation. The respective means were examined to see if further consistencies were apparent. Indeed, all four interactions showed the same pattern: decreasing differences among groups at the lower end of the participation scale. For example, the sex difference in science decreased from $.29\sigma$ among the highest participation students to $.21\sigma$ for the mid-high group to $.14\sigma$ for the mid-low group to $.13\sigma$ for the low participation group. Likewise racial differences in both mathematics and science were greatest at the upper end of the scale and smallest at lower degrees of participation. Again the data suggest that higher degrees of participation are associated with the greatest amount of differentiation in academic achievement.

SUMMARY

This study addressed the question: "Is the extent of a youngster's participation in school and classroom activities related to his/her academic performance?" Subjects for the study consisted of a nationwide sample of eighth-grade students who were classified into one of four participation groups based on three factors: absenteeism and tardiness, participation outside the regular academic program, and behavior in the classroom. Profiles on the three participation factors were distinct for gender and for racial/ethnic groups in the sample.

The primary outcome variables were achievement tests in Reading, Mathematics, Science, and History/Geography/Civics. Multivariate analysis of variance revealed noteworthy differences among the participation groups in school achievement. Multivariate effect sizes were .75 for the linear trend and .09 for the quadratic trend. That is, there is a strong linear association of participation with academic achievement--the higher the participation level, the higher the (average) achievement scores. In addition, differences between the higher groups of participants were larger than differences between the lower groups. The potential benefits of a small amount of participation (compared with none) are not as great as those for a high degree of participation (compared with some).

On the whole there were no significant interactions of participation with gender or race/ethnicity. That is, the strong association of participation with achievement is supported for males and females and for Asian, Hispanic, African American, and non-Hispanic White students alike.

While the potentially harmful effects of nonparticipation in class and school are obvious, achievement and participation are undoubtedly related in a reciprocal fashion. The literature cited in the introduction to this report notes that young children attribute success to effort rather than to ability. From this perspective, it is also reasonable to assume that for some youngsters, effort is expended--perhaps independently of achievement--until a pattern of failure is realized. If poor grades or low test scores are accompanied by adversarial

interactions with school staff, the youngster's willingness to engage in school-related activities can only be expected to diminish.

Study II: Engagement Among Students At Risk

The primary question of Study II is: Are students at-risk who achieve at acceptable levels academically distinguished from their less successful peers by the extent of their physical and emotional *engagement* in school? To address this question, a subsample of NELS:88 eighth-grade students was identified who would be classified as being at risk for educational failure according to traditional status characteristics. Three sets of risk factors were identified, and all students who were characterized by one or more of these were selected for the study. Risk group "UM" (urban minority) consisted of all individuals who indicated that they were of Asian, Hispanic, or Black and attending a school in an urban area. Risk group "LS" (low socioeconomic status) consisted of all students who were in the lower third of the distribution on the NELS:88 socioeconomic status (SES) index and whose family had 5 or more members.⁵ Risk group "LM" (language minority) consisted of all individuals who come from a home in which a language other than English is typically spoken. A youngster was classified as language minority in the NELS:88 survey if either of the teachers or the student reported that another language is usually spoken at home. Table 6 gives the distribution of risk categories for each of the four racial/ethnic groups in the study. It is clear that students of Hispanic origin have the greatest frequency of one or more risk factors and the highest incidence of multiple risk factors of the four groups studied.⁶ The total sample for Table 6 this study consisted of 5945 youngsters, although *N*'s vary somewhat from one analysis to another depending on the pattern of missing responses.

⁵The NELS:88 index of socioeconomic status did not take family size into account as some other indexes have done. Family size is also a consideration in determining whether a youngster is eligible for government-subsidized lunches at school. Inclusion of the family size variable undoubtedly reduced the number of White students in the sample to just those living in the very lowest socioeconomic conditions. This is consistent with the decision to include minority students who are also attending inner-city schools, that is, to identify those "most at risk" by traditional criteria.

⁶Of course, White youngsters, by definition, cannot be characterized as "minority."

Table 6**Distribution of Characteristics for Eighth-Grade Students At Risk**

Risk Factors	Racial/Ethnic Group			
	Asian/Pacific Islander	Hispanic	Black	White, not Hispanic
Urban Minority (UM)		13.0	40.6	
Low SES (LS)	3.9	5.5	15.2	77.5
Language Minority (LM)	45.5	19.2	1.8	17.5
UM and LS	1.7	4.1	15.1	
UM and LM	27.6	19.0	1.8	
LS and LM	9.6	20.3	1.0	5.0
UM and LS and LM	11.7	18.8	0.8	
Number in At-Risk Sample	718	2063	1574	1590
Percentage of Total Racial/ Ethnic Group	64.4	82.2	66.9	13.6

Note: All values are percentage of the particular racial/ethnic group.

The at-risk sample was further divided into achievement levels according to the youngsters' performance on the NELS:88 reading and mathematics achievement tests. The highest group, termed "successful," consisted of students who scored above the national mean (of all students) in both reading and mathematics. This criterion of success was chosen under the assumption that youngsters achieving at this level would be judged as adequate whether or not they were in a high-risk group. For those at risk, performing at the national mean may be a real accomplishment, as the statistics were to show. Because the focus of Study II is on behaviors that distinguish youngsters who are even moderately successful from their less successful peers, a middle group--"passing"--was also defined. This classification consisted of students who scored higher than one-half standard deviation below the national mean on both tests. It includes students who score between the mean and $.5\sigma$ below the mean on both tests as well as students who score in this range on one test and above the mean on the other. A third group, termed "unsuccessful," consisted of individuals who scored lower than one-half standard deviation below the mean on one or both tests.

The proportions of students in each performance group are given in Table 7. In total, about 65% of the at-risk sample is in the unsuccessful category. In contrast, 45% of not-at-risk youngsters are classified as successful. About the same numbers of Asian students are classified as successful and unsuccessful. As a group, these youngsters are not as hindered by the multiplicity of risk characteristics as are Hispanics. Students of Hispanic origin are characterized by the greatest incidence of multiple risk factors. However, the smallest proportions of passing and successful students in the sample were Black.

RESULTS

The results of the analysis of student characteristics are described in three parts. First (1) the sample of youngsters who are at risk because of status characteristics is compared with those youngsters who are not at risk by this definition. Second (2) successful, passing, and unsuccessful students at risk are compared in terms of a variety of other outcome

Table 7 Distribution of Reading-Mathematics Performance for Students At Risk

Table 7

Distribution of Reading-Mathematics Performance for Students at Risk

Racial/Ethnic Group	Performance		
	Unsuccessful	Passing	Successful
Asian/Pacific Islander	42.1	15.3	42.6
Hispanic	68.8	15.0	16.2
Black	76.7	11.4	11.9
White, not Hispanic	60.5	18.1	21.4
All Students At Risk	65.4	14.9	19.6
Students Not At Risk	38.7	16.2	45.2

Note: All values are percentages based on row totals.

variables, that is, a more complete profile of school-relevant outcomes is given. And (3) the key question is addressed, "are more and less successful students at risk distinguished by the degree of engagement in school that they exhibit?"

At-Risk Students Compared with Those Not At Risk

A set of characteristics from the NELS:88 student and parent questionnaires is summarized in Table 8 for students in the at-risk sample and for those who do not meet any of the three risk criteria used in this study. These (unweighted) results are intended to provide a fuller picture of the specific sample of this study, and not to estimate "true" distributions of characteristics of students at risk in public schools in the United States.

At home, both groups reported watching an astounding 3 to 4 hours of television daily. Youngsters at risk watched more television, on average, both on weekdays and weekends. In contrast, eighth grade students in the sample averaged fewer than 2 hours per *week* of nonrequired reading, with at-risk youngsters reporting less reading than their not-at-risk peers.

Over half of the youngsters not at risk attended some form of nursery or preschool while about one-third of youngsters at risk attended nursery or preschool. Kindergarten is not mandatory for youngsters in all states, leaving the option open for parents to enroll their children in private kindergartens. In all, about 95% of the not-at-risk sample attended a kindergarten class, and about 88% of youngsters at risk did so. Unfortunately the at-risk youngsters who might have particularly benefitted from these early school experiences did not participate in them as commonly as those not at risk. At the same time, youngsters in the at-risk sample changed schools more times prior to eighth grade, making it all the more difficult for physical and emotional engagement in the school environment to be maintained.

Table 8**Comparison of Students At Risk With Students Not At Risk**

Characteristic	Risk Group	
	Not At Risk	At Risk
Mean hours of Television: Weekdays	3.31 (1.55)	3.61 (1.71)
Mean hours of Television: Weekends	3.86 (1.74)	4.06 (1.89)
Mean hours reading for pleasure	1.82 (1.54)	1.58 (1.42)
Percent who attended preschool	56.2	36.6
Percent who attended kindergarten	94.9	87.8
Mean number of school changes	1.25 (1.56)	1.59 (1.62)
Percent in:		
Unsuccessful achievement group	38.7	66.0
Passing achievement group	16.2	14.7
Successful achievement group	45.2	19.3
Mean self-reported grade average	2.94 (.77)	2.71 (.75)
Percent retained one or more grades	16.8	28.7
Percent who plan to:		
Attend a post-secondary school	89.7	82.6
Graduate from college	68.8	53.6

Note: Scale of each variable is described in the appendix. Standard deviations in parentheses.

The separation of youngsters into three achievement groups yielded substantially different distributions for youngsters at risk by one or more of the status characteristics and for those not at risk. About 61% of the not-at-risk sample was classified as passing or successful, while 66% of the at-risk sample was classified as unsuccessful. Other indicators of school performance were consistent with this difference. According to the parents of these youngsters, about 17% of the not-at-risk sample had been retained in grade at least once prior to eighth grade and over 28% of youngsters at risk have been grade-retained. According to the students' self reports, the grades received by students at risk were somewhat lower than those received by their not-at-risk peers, and fewer students at risk planned to go on for further education following high school or to complete college. Of course, there may be bias in the figures for either or both groups because of the self-report, low-stakes nature of the questionnaire.

Successful, Passing, and Unsuccessful Students At Risk

The focus of this investigation is on students at risk who are successful in school despite the handicaps associated with minority status, coming from a low income family, or having a home language other than English. The sample of youngsters with one or more of these status characteristics was divided into three groups according to their reading and mathematics achievement: academically successful, passing, and unsuccessful. In order to characterize the groups more fully, cross-classifications of achievement were obtained with other background and performance dimensions.⁷

Achievement in other subjects, grades, and education plans. The three achievement groups were defined on the basis of youngsters' performance on the reading and mathematics subtests of the NELS:88 battery. Scores on the science and history tests were also coded as

⁷All percentages in this section were computed from weighted data, that is, using the sampling weight for each individual computed in the NELS:88 survey. The chi-square values were obtained using the SUDAAN program to take the multistage sampling design into account.

successful, passing, or unsuccessful depending on whether the student scored above the national mean, between the mean and one-half standard deviation below the mean, or less than one-half standard deviation below the mean, respectively.

Table 9 gives the percentages of youngsters in each achievement group who scored at each level on the science and history tests. The relationships among the achievement measures were high. In all, 60.5% of youngsters were in the same achievement group for science as for reading/mathematics,⁸ and 60.0% of the sample was in the same achievement group for history as for reading/mathematics. While 34% of the at-risk sample could be considered to be doing passing work or better in science and mathematics (see Table 8) over half of the sample could be considered as passing or better in science and over half in history. The X^2 -tests of these relationships both exceed 200 which, with 4 degrees of freedom, are highly significant. In general high-risk pupils who are successful in reading and mathematics are successful in other subject areas as well.

Likewise, there is a strong association between achievement in reading and mathematics and self-reported grades. The grade averages in Table 9 undoubtedly reflect an upward bias in students' reports. For example, fewer than 10% of the students in the unsuccessful group reported receiving mostly D's and F's (GPA's of .5 to 1.5) and almost as many reported receiving all A's and B's (GPA's of 3.5 to 4.0). Nevertheless, the association between the reading and mathematics achievement and self-reported grades is consistent: the modal grade category for unsuccessful students is "1.6-2.5," for passing students it is "2.6-3.5," and for successful students it is "3.5-4.0." Again, the X^2 -statistic is about 200 which, based on 6 degrees of freedom, is highly significant. In general, students' self-reported grades are positively associated with their achievement on reading and mathematics tests.

⁸This is the total percentage of the sample who were successful on both reading/mathematics and science (above the national mean), plus those who were "passing" on both, plus those who were "unsuccessful" on both. The value can be obtained from Table 9 only indirectly.

Table 9**Educational Outcomes and Plans for Students At Risk**

Performance Measure		Reading/Mathematics Achievement Group			All
		Unsuccessful	Passing	Successful	
Science:	Unsuccessful	62.6	27.3	7.4	47.6
	Passing	24.4	31.8	16.3	24.1
	Successful	12.9	40.9	76.4	28.3
History:	Unsuccessful	61.2	20.4	5.4	45.3
	Passing	21.7	27.3	11.4	20.7
	Successful	17.1	52.3	83.2	34.0
Self-Reported Grade Average:					
	.5 - 1.5	9.9	4.9	1.7	7.7
	1.6 - 2.5	47.3	31.6	18.0	39.7
	2.6 - 3.4	33.3	38.9	35.5	34.5
	3.5 - 4.0	9.4	24.6	44.8	18.0
Educational Plans:					
	Won't finish high school	3.7	.6	.3	2.6
	Graduate from high school	19.2	13.2	5.1	15.8
	Vocational, trade, or business school	14.2	9.7	7.2	12.3
	Attend college	18.3	16.2	13.0	17.1
	Graduate from college	29.6	42.8	41.8	33.7
	Post-college schooling	15.0	17.5	32.6	18.5

Note: All values are percentages of the particular reading/mathematics achievement group; that is, column totals are 100%.

There is a well documented tendency for minority students to report unrealistically high aspirations, considering the many constraints that they confront (Coleman et al., 1966; Mickelson, 1990; Smith & Abramson, 1962; Soares & Soares, 1969; Solorzano, 1992). This effect is apparent in the educational plans reported by the eighth grade sample of youngsters at risk. At the extreme, almost 30% of the least successful group stated that they plan to graduate from college and another 15% that they plan to attend graduate school. At the same time, the association between achievement groups and the youngsters' post-secondary education plans is highly statistically significant [$X^2(10, N=6146) = 157.64, p < .001$]. In general, higher percentages of unsuccessful students report that they will not finish high school or will not go on to any post-secondary school, while higher percentages of the passing and successful groups expect to graduate from college.

The identification of three achievement levels among students at risk produces groups that are clearly distinct in terms of other school achievements, grades received, and post-secondary education plans. These results also demonstrate that there is a substantial number of eighth graders who are performing reasonably well in their academic subjects in spite of the handicaps that may be associated with minority status, low incomes, or a home language other than English.

*Previous school experiences.*⁹ There is a significant association of reading and mathematics performance with the student having attended a nursery or preschool. While 33.8% of unsuccessful students had attended one or the other of these early-year programs, 39.8% and 46.9% of the passing and successful students, respectively, had done so. The test of association of nursery/preschool with achievement groups was statistically significant at $p < .001$ [$X^2(2, N=3985) = 30.59$]. It is not clear whether the preschool experience plays a role in causing higher achievement in later years or whether the causal mechanisms are more complex, for example, parents' own educational attitudes may have caused them to send their

⁹Because all of the variables in this section are simple dichotomies, the percentages are given in text rather than a table.

youngsters to nursery school and to promote higher achievement in their children. However, preschool programs may provide an important early opportunity for youngsters to develop participatory behaviors that are beneficial to their school work in later years.

About 88% of the unsuccessful and passing groups had attended kindergarten, while 91.3% of successful students had done so. The association was only marginally significant, [$X^2(2, N=3985) = 6.86, p < .03$]. The fact that most youngsters in the U.S. attend kindergarten makes it difficult to detect the possible effects of this early school experience, especially in a large-scale survey. A more intensive investigation might address whether youngsters attended kindergarten for a half or full day, the nature of the instruction that was provided, and the experiences of those who did not attend kindergarten. The present investigation yields just the finding that the most successful at-risk youngsters attended kindergarten at a slightly higher rate than those with lower reading and mathematics performance.

By the time the students reached eighth grade, 38.3% of the unsuccessful group had been retained one or more grades. In contrast, 19.5% of the passing group and only 9.9% of youngsters classified as successful had been grade retained. The X^2 -test indicates that this relationship is highly statistically significant, [$X^2(2, N=5381) = 143.6, p < .001$]. The results for grade retentions, however, raise a critical but unanswered question: Do the positive effects on a youngster's learning or social integration outweigh the harmful psychological effects that may accrue? If keeping a student in a grade for an additional year encourages emotional or physical withdrawal from school and class activities, then a supplementary program to foster engagement behavior is all the more essential.

Television viewing and reading at home. American youngsters continue to fill large blocks of time watching television (see Table 10). Over one-third of eighth graders at risk report watching more than 4 hours of television per day during the week and almost half of eighth graders at risk report watching more than 4 hours per day on weekends. The

Table 10

Television Viewing and Reading for Pleasure among Students At Risk

Activity	Reading/Mathematics Achievement Group			All
	Unsuccessful	Passing	Successful	
Television (Weekdays):				
Don't watch TV ^a	4.0	3.3	2.1	3.5
Less than 2 hours	23.3	25.7	27.3	24.5
2-4 hours	35.9	39.6	42.8	37.9
More than 4 hours	36.8	31.3	27.8	34.1
Television (Weekends):^a				
Don't watch TV	6.2	3.8	2.9	5.1
Less than 2 hours	18.5	15.8	15.2	17.4
2-4 hours	26.1	29.5	32.3	27.9
More than 4 hours	49.2	50.9	49.7	49.6
Reading for pleasure:^b				
None	27.3	17.4	13.4	23.2
1 hour or less	37.0	38.0	30.0	35.9
2-3 hours	27.3	29.1	35.3	29.0
4 hours or more	8.4	15.4	21.4	11.9

Note: All values are percentages of the particular reading/mathematics achievement group; that is, column totals are 100%.

^a Reported TV viewing per day.

^b Reported reading per week.

relationship of TV viewing with reading and mathematics achievement is statistically significant for both weekdays [$\chi^2(12, N=5117) = 53.23, p < .001$] and weekends [$\chi^2(12, N=4920) = 49.70, p < .001$]. The association is especially apparent in the low and high TV viewing categories on *weekdays*. The percentages of youngsters who report watching no television and watching less than 2 hours per day increase as academic achievement goes up, and the percentages who report watching more than 4 hours per day decreases as achievement goes up. On weekends, small amounts of TV viewing are also associated with higher school achievement but about an equal proportion of each achievement group report watching more than 4 hours per day.

Over one quarter (27.3%) of unsuccessful eighth graders at risk report that they never read on their own outside of school. This percentage decreases to 17.4% among passing students and 13.4% of the successful group. In contrast, the percentages of youngsters who read on their own for 2 to 3 hours and for 4 hours or more per week increase monotonically with school achievement. The association of reading with the achievement groups is highly statistically significant [$\chi^2(10, N=5736) = 115.42, p < .001$].

Summary. Above all else, it is clear that the students who were identified as being at risk for educational failure because of their race, income, or home language are not a homogeneous group. If a modest definition of school performance is adopted, then over one-third of the high-risk youngsters could be classified as "passing" or better, and about 20% can be termed "successful." The more successful youngsters are distinguished from their less successful peers on a range of educational achievements including grades received and educational plans. They watch less television, particularly on weekdays, and read more for their own enjoyment. More of the successful youngsters had attended a preschool program, and a slightly higher percentage had attended kindergarten.

Several of these factors may be attributed to parents' roles as decision makers and monitors of their youngsters' behavior. The decision to enroll a child in a preschool

program or to seek out a kindergarten when one is not provided by the state is clearly in the parents' domain. Parents may also restrict the amount of television viewing from the child's early years and may encourage reading through their own reading habits and by having reading materials in the home. These early experiences may serve to foster the youngster's engagement in school, although the mechanisms by which early behaviors become habitual patterns of participation or withdrawal over the years remain to be understood.

Participation Differences among Achievement Groups

The primary analysis of this investigation consisted of comparing the three achievement groups on five sets of participation and participation-related measures. Each set was analyzed by fitting a three-way MANOVA model to the data, with achievement groups, gender, and race as the factors of classification. The results are presented here in four parts: (1) the six primary school and classroom participation measures; (2) students' participation outside the regular school program; (3) indicators of identification with school; and (4) parental involvement with the youngster's school work, and their own participation in school-related activities.

Classroom and school academic participation. This set of measures includes three scales based on pupils' self reports and three scales obtained from teachers' ratings of the individual youngster regarding attendance, preparation, and active involvement in class activities. A summary of the MANOVA is given in Table 11. Multivariate tests indicate that the three main effects--gender, race, and performance--are all statistically significant (using $\alpha = .0073$) but no interactions.

Gender and race differences provide background information. Gender differences are attributable to the greater degree of noncooperative behavior among males, whether reported by the teachers or by the students themselves. Differences on the three significant measures, PREPARATION, BEHAVIOR, and NOT-ENGAGED, range from $.31\sigma$ to $.53\sigma$ (values not

Table 11

MONOVA Results for Classroom and School Academic Participation

Effect ^a	Multivariate Test ^b	Univariate Tests					
		ATTENDANCE	PREPARATION	BEHAVIOR	ABS-TARDY	WTHDRAWN	NOT-ENGAGED
Gender	$p < .0001$		$p < .0001$	$p < .0001$			$p < .0001$
Race	$p < .0001$	$p < .01$		$p < .01$	$p < .01$		$p < .01$
Performance	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$
Gender x Race							
Gender x Performance	$p < .05$		$p < .05$	$p < .01$			$p < .05$
Race x Performance							$p < .05$
Gender x Race x Performance						$p < .05$	

Note: Results indicated are those with p -values less than .05.

^a The nonorthogonal design required tests of significance in several orders (Finn & Bock, 1985). The results presented here were obtained as follows: Each main effect was tested eliminating both other main effects; each interaction was tested eliminating all terms listed above it in the table.

^b Obtained from F -approximation from Wilks' likelihood ratio.

tabled). Males and females are not distinct on either attendance scale, nor is either group noticeably more "passive or withdrawn."

Two of three multivariate contrasts (Hotelling's T^2) among racial/ethnic groups are statistically significant, the comparisons of Asian students with whites and Black students with whites. Asian students have "better" average scores than white students on both attendance measures and on both the teachers' and student's ratings of classroom behavior, with effect sizes ranging from $.19\sigma$ to $.27\sigma$. No differences were found between these groups in being prepared for class or being exceptionally passive or withdrawn. The only individual variable that showed a significant difference between Black and White students at $p < .01$ was students' self reported attendance, on which the average for Black students was $.13\sigma$ "better" than for Whites (other variables were "marginal" including WITHDRAWN in particular). These differences should be interpreted in the context of the unique sample selection process, however. In particular, the sample does not include a cross-section of minority students but only those attending inner-city schools. Likewise, the White students in the sample do not represent a cross-section of all White eighth graders, but an extreme group from low-SES or non-English-speaking homes with large families.

For the entire set of participation measures, the multivariate contrast between the *unsuccessful* performance group and the average of the others was statistically significant at $p < .0001$; the multivariate "effect size" (Mahalanobis's D) was $.45$.¹⁰ That is, there is almost a half of a standard deviation difference between the mean participation levels of unsuccessful students at risk and those who are passing or successful. The multivariate contrast between the *passing* and *successful* groups was not statistically significant ($D = .20$, $p < .06$). In general, no mean differences were detected in the participatory behavior of youngsters classified as passing compared with those classified as successful.

¹⁰Values not given in tables.

The means on all six measures and mean differences ("effect sizes") for each measure are given in Table 12.¹¹ It is clear that unsuccessful and more successful students at risk are distinct on all six participation behaviors, including those reported by their teachers and those reported by the students themselves. Attendance behaviors distinguish these groups in the expected direction; more successful students are prepared for class more often, participate more in class, and present behavior problems less frequently than unsuccessful students. Successful students are not just passive citizens in the classroom, however, but are rated as being less passive and withdrawn than their academically unsuccessful peers.

Several more detailed findings are of interest. First, while the multivariate test of the difference between passing and successful students was not significant, this difference would be statistically significant at the .05 level if either WITHDRAWN or NOT-ENGAGED was considered by itself. Thus there is some indication that being an active participant in the classroom, especially as perceived by the teacher, is a particularly important antecedent of school performance even among high-risk students.

Second, while the multivariate test of gender-x-performance interaction is not statistically significant according to the study's .0073 criterion, the data suggest that there may be some weak interaction of achievement groups with gender. This is found especially on the three measures that also have significant gender differences (PREPARATION, BEHAVIOR, NOT-ENGAGED). In both sex groups, the mean behavior ratings increase as academic performance improves. However, the difference between successful and unsuccessful males is much larger than that between successful and unsuccessful

¹¹Pooled within-cell standard deviations for Study I and Study II are given in Appendix B. The reader is reminded that since all six scales are worded in the negative, lower scores and negative scores represent "preferred" behavior. The magnitudes of the means are relatively small because the data were expressed as deviations from school averages prior to the analysis.

Means and Mean Differences for Achievement Groups

Group	Variable					
	ATTENDANCE	PREPARATION	BEHAVIOR	ABS-TARDY	WITHDRAWN	NOT-ENGAGED
Unsuccessful						
Males	.091	.172	.199	.063	.005	.301
Females	-.030	-.068	-.086	.046	.007	-.081
All	.059	.047	.051	.054	.006	.102
Passing						
Males	-.105	.051	.019	-.075	-.007	.013
Females	-.056	-.174	-.162	-.058	-.005	-.275
All	-.079	-.070	-.078	-.066	-.006	-.142
Successful						
Males	-.108	-.031	-.007	-.145	-.038	-.157
Females	-.116	-.124	-.179	-.060	-.027	-.343
All	-.112	-.078	-.093	-.102	-.033	-.250

EFFECT SIZES: ^a						
Unsuccessful -						
(Passing +	.24***	.18***	.27***	.24***	.13***	.40***
Successful)/2						
Passing - Successful	.04	.02	.03	.05	.13*	.15**

^a Effect sizes are least-squares estimates of mean differences in the unequal-*N* analysis of variance model, divided by the pooled within-cell standard deviation of the particular variable. Standard deviations are given in the Appendix. Significance indicated as follows: **p*<.05; ***p*<.01; ****p*<.001.

females. At the extreme, the means for unsuccessful eighth grade males stands out from the others. These individuals appear to be particularly ill-prepared for class and withdrawn from learning activities, and presenting many behavior problems. Two out of three of the ratings are student self-reports, raising the possibility that these individuals feel especially alienated from the classroom activity structure.

In general there are substantial differences among achievement groups in the extent to which students are engaged in productive classroom behavior. The virtual absence of any two- or three-way interactions with race adds support to this finding. That is, the types of behavior that accompany successful academic performance are the same among all racial/ethnic groups studied. Attending class, arriving on time and being prepared for the day's work, participating in rather than withdrawing from participation in class activities, and refraining from disruptive acts are accompanied by acceptable school performance (or better) among White, Hispanic, Black, and Asian students alike.

Participation outside the regular curriculum. The MANOVA results for these measures are summarized in Table 13. The two measures of participation outside of school--homework and involvement in extracurricular activities--have significant gender, race, and performance group main effects and no significant interactions. On average, eighth grade females in the at-risk sample reported doing more homework and participating in more extracurricular activities than their male peers; both differences were $.11\sigma$.¹² Of the three contrasts among racial groups, only the multivariate difference between Black and White students was statistically significant [$F(2,4185) = 6.96, p < .001$]. This is attributable to the extracurricular activity measure on which White students have a lower mean than Blacks (and lower than the other three racial/ethnic groups as well).

¹²Because of the simple pattern of outcomes, detailed results for these variables are given in text rather than a table.

Table 13

MANOVA Results for Participation Outside of School, and Identification

Effect ^a	Participation Outside Of School		Identification with School				UTILITY
	Multivariate ^b	HOMEWORK	EXT-CURR	Multivariate ^b	MOVES	STU-TEACHER	
Gender	$p < .0001$	$p < .0001$	$p < .001$	$p < .0001$			$p < .0001$
Race	$p < .001$	$p < .05$	$p < .01$	$p < .0001$	$p < .0001$	$p < .01$	$p < .0001$
Performance	$p < .0001$	$p < .0001$	$p < .0001$	$p < .05$	$p < .0001$	$p < .05$	$p < .01$
Gender x Race				$p < .05$			$p < .01$
Gender x Performance							
Race x Performance						$p < .05$	
Gender x Race x Performance				$p < .05$			

Note: Results indicated are those with p -values less than .05.

^a The nonorthogonal design required tests of significance in several orders (Finn & Bock, 1985). The results presented here were obtained as follows: Each main effect was tested eliminating both other main effects; each interaction was tested eliminating all terms listed above it in the table.

^b Obtained from F -approximation from Wilks' likelihood ratio.

Both multivariate contrasts among performance groups were statistically significant for this pair of variables, with multivariate effect sizes of $D = .28$ for unsuccessful compared with others and $D = .18$ for passing compared with successful students. The means for both variables increase monotonically with academic performance, that is, higher performance is associated with greater amounts of homework and greater degrees of extracurricular participation. In comparing unsuccessful students with their more successful peers, the difference in amount of homework is $.22\sigma$ and in number of extracurricular activities is $.20\sigma$. For the comparison of passing with successful students, the difference in amount of homework is $.17\sigma$. The passing-successful contrast in extracurricular activities is $.08\sigma$ but is not statistically significant when tested in isolation.

The results parallel those for participation in the classroom. The largest difference observed was between unsuccessful students at risk and both groups of their more successful peers. Successful students are involved in school related activities outside of the regular academic program as indicated by participation in extracurricular activities and amount of homework. There is no significant interaction with gender or race on these measures, indicating that the benefit of participation in these activities accrues both to males and females at risk, and to Asian, Hispanic, Black and White eighth graders alike.

Identification with school. The "belonging" and "valuing" components of identification with school were analyzed separately (see Table 13). For the belonging measures, the multivariate tests of gender differences and race differences were statistically significant. The gender difference is attributable entirely to the higher mean on PERCEPTIONS for males. Males report that their classmates perceive them as popular, athletic, good students, and important to a greater extent than females do. Race differences were mixed; means are given in Table 14. The contrast of Black with White students was significant for the set of three belonging measures, while the multivariate contrasts of Asians

Table 14

Means on Identification Variables by Race and Performance Level

Group	Measure			
	MOVES	STU-TEACHER	PERCEPTIONS	UTILITY
Race/Ethnicity:				
Asian	1.79	.040	.019	.102
Hispanic	1.38	-.011	-.010	.001
Black	1.63	.030	.043	.014
Non-Hispanic white	1.56	-.029	-.025	-.026
Performance:				
Unsuccessful	1.56	-.004	-.007	-.019
Passing	1.59	-.012	.008	.011
Successful	1.47	.014	.030	.066

EFFECT SIZES:^a				
Unsuccessful- (Passing + Successful)/2	.03	-.02	-.09**	-.11**
Passing - Successful	.10	-.05	-.05	-.09

^a Effect sizes are least-squares estimates of mean differences in the unequal-*N* analysis of variance model, divided by the pooled within-cell standard deviation of the particular variable. Standard deviations are given in the appendix. Significance indicated as follows: **p*<.05; ***p*<.01; ****p*<.0001.

with Whites and Hispanics with non-Hispanic Whites were not.¹³ The most pronounced Black-White difference were found for STU-TEACHER and PERCEPTIONS. On STU-TEACHER, a variable reflecting the warmth and supportiveness of the school environment as perceived by students, Blacks gave substantially higher ratings than Whites; the effect size was $.14\sigma$. On PERCEPTIONS, a variable reflecting the student's views of how the class perceives him/her (as popular, athletic, a good student, and important), Black students gave the highest average ratings and Whites the lowest; the effect size was $.19\sigma$. This is consistent with the established tendency for Black students to give self-reports that are higher than other racial/ethnic groups (Crocker & Major, 1989; Porter & Washington, 1979; Voelkl, 1992).

There was no significant difference among performance groups on the multivariate set of belonging measures (MOVES, STU-TEACHER, and PERCEPTIONS), nor was either contrast significant in multivariate form. That is, among students at risk by virtue of their race, income, or home language, those who are academically successful are not distinct from their less successful peers in their sense of "belonging" in the school setting. In particular, they have not moved from school to school significantly less than students who do not succeed academically and do not perceive the school environment as being any more supportive than those who do not succeed. There is some suggestion of a significant difference between successful and other students on PERCEPTIONS alone, with successful students reporting that they are viewed more positively by their classmates.

There is no difference between males and females, on the average, on UTILITY, a variable that reflects the student's values toward education. Of the racial/ethnic groups, Asian students with the highest mean rating and differed significantly from White students with the lowest; no other differences among racial groups were significant. Asian students perceive school subjects as being substantially more important to their futures than do Hispanic, Black, or White students in the high-risk sample.

¹³Values not given in tables.

There was a statistically significant difference among the three performance groups on the valuing measure (UTILITY). The means and estimated contrasts (Table 14) indicate that difference is largely between unsuccessful students and the two more successful groups. On average, students at risk who are passing or successful academically are those who perceive that school subjects are more useful to their future.

The finding regarding "belonging" contradicts the proposition of the participation-identification model that identification with school develops over a number of years if the student is regularly engaged in classroom activities and experiences some degree of academic success. The psychological processes that perpetuate a youngster's engagement in school activities are not well understood, and this domain certainly requires more exploration.

At the same time, several other explanations for the lack of association of "belonging" measures with performance are possible. For one, while there are no differences among subgroups of youngsters at risk by virtue of race, income, or language, the larger differences may exist between these students and those not at risk by virtue of status characteristics. If this were the case, however, then the psychological processes that distinguish more and less successful students at risk still remain to be understood. Second, the nature of the particular variables in this analysis may be partially responsible for the finding of nonsignificance. If measures such as MOVES and STU-TEACHER operate mainly at a school level, then a school-level analysis would discover their importance rather than a student-level analysis. Thus it is possible that schools with higher mean performance have students who have remained in the same location longer and have school environments that are seen as warmer and more supportive.

Although measures of identification with school are not strongly related to performance, are they associated with students' active participation in class? The correlations of the identification measures with the six primary participation scales are given in Table 15. All of the correlations are small but all are in the expected direction and all except the smallest two are significant at $p < .01$. The three students' self-reports of

Table 15

Correlations of Identification with Participation Measures

Participation Measure	Identification Measure			All (R ²)
	STU-TEACHER	PERCEPTIONS	UTILITY	
ATTENDANCE	-.18	-.09	-.13	.04
PREPARATION	-.22	-.08	-.13	.05
BEHAVIOR	-.23	-.05	-.07	.05
ABS-TARDY	-.10	-.03	-.06	.01
WITHDRAWN	-.05	-.10	-.04	.01
NOT-ENGAGED	-.17	-.09	-.06	.03

Note: All simple correlations are significant at $p < .01$ except the two smallest. All multiple correlations are significant at $p < .0001$.

participation (ATTENDANCE, PREPARATION, BEHAVIOR) have somewhat stronger correlations with the identification measures, which are also student self-reports. The first canonical correlation between the two sets of measures is .31, statistically significant at $p < .0001$. The correlations of the original scales with the canonical variates indicates that the association is concentrated in the relationship of STU-TEACHER with ATTENDANCE, PREPARATION, BEHAVIOR, and NOT-ENGAGED. That is, students' perceptions of the concern and support provided by school staff is the primary correlate of participation in productive classroom activities. In sum, while the correlations are small, there is a consistent pattern of greater degrees of identification being associated with higher levels of participation among eighth-grade students at risk.

Parents' involvement. Several gender and race differences were found in parental involvement in their eighth graders' schooling (See Table 16). On average, parents of boys check their youngsters' homework more frequently than parents of girls and contact the school more often to discuss their sons' academic progress, that is, there seems to be somewhat more "monitoring" of boys' work than of girls'. Girls report that they initiate more discussion with their parents about school work than do boys.¹⁴

Race differences did not follow a consistent pattern. The significant overall differences on four parent measures could be traced to several particular contrasts. On average, Asian parents reported talking more with their youngsters about school experiences and plans (PAR-TALK) and contacting the school more often to discuss their youngsters' performance (PAR-CONTACTS). Both Hispanic and Black youngsters reported that they talk more with their parents about school activities and plans than do Whites (DISCUSS); Asian students did not report initiating this sort of interaction as often as other minority groups. Black parents reported a substantially higher frequency of participation in school functions than the other racial/ethnic groups (PAR-INVOLVE).

¹⁴Values not given in tables.

Table 16

MANOVA Results for Parental Involvement

Effect ^a	Involvement in Student's Work				Parent's Participation			
	Multivariate ^b	CHK-HOMEWORK	DISCUSS	PAR-TALK	RESOURCES	Multivariate ^b	PAR-CONTACTS	PAR-INVOLVE
Gender	$p < .0001$	$p < .0001$	$p < .0001$			$p < .0001$	$p < .0001$	
Race	$p < .0001$		$p < .001$	$p < .001$		$p < .0001$	$p < .001$	$p < .01$
Performance	$p < .0001$	$p < .01$	$p < .0001$	$p < .001$	$p < .0001$			
Gender x Race								
Gender x Performance						$p < .05$		$p < .05$
Race x Performance								
Gender x Race x Performance								

^a The nonorthogonal design required tests of significance in several orders (Finn & Bock, 1985). The results presented here were obtained as follows: Each main effect was tested eliminating both other main effects; each interaction was tested eliminating all terms listed above it in the table.

^b Obtained from *F*-approximation from Wilks' likelihood ratio.

Overall, parents' direct involvement with their youngsters regarding school work is positively associated with academic performance, while contact and involvement with the school is not. Using the multivariate approach (Hotelling's T^2) both differences among performance groups were statistically significant at $p < .0001$; multivariate effect sizes were .34 for the comparison of unsuccessful students with all who were more successful, and .29 for the comparison of passing and successful groups. In general the association is consistent and moderately strong.

The nature of the association differs somewhat for the specific measures of parental involvement. Univariate t -tests indicate that the contrast of unsuccessful with all passing and successful students was significant for all four measures. The contrast of passing with successful students is significant only for DISCUSS, however. On average, unsuccessful students have fewer resources in their homes to support school work, report talking less with their parents about school work and plans, and have parents who confirm that they talk less with their eighth graders about school experiences in comparison to youngsters who are passing or academically successful. The magnitudes of the differences are $-.12\sigma$ for RESOURCES, $-.28\sigma$ for DISCUSS, and $-.11\sigma$ for PAR-TALK. In contrast, unsuccessful students report that their parents check their homework more regularly than parents of passing and successful students; the effect size is $.10\sigma$.

The student's report of conversation with parents about school work and high school plans (DISCUSS) is most highly related to performance of all variables in this set. The mean difference between unsuccessful students and others is $.28\sigma$ and between passing and successful students is $.22\sigma$. This measure, unlike the other three, reflects the *youngster's* initiative in communicating with parents and is most like the in-school participation variables in this sense. In sum, while parents' provision of literary resources and discussing school experiences with their eighth graders are related to achievement, the youngster's own participatory behavior--even out of school--is consistently associated with academic success.

SUMMARY

This investigation documents that students who would be identified as "at risk" because of their race, family income, or home language are in fact a diverse group! Among them is a significant number of individuals whose academic achievement is at an acceptable level or better--perhaps as many as one-third or more of these youngsters. In eighth grade, they are distinct from their less successful peers on a number of performance indicators including achievement in specific school subjects, course grades, and plans for post-secondary education. More of the successful students had attended a nursery or preschool, and successful students at risk watched less television, on average, and read more for their own pleasure than students who were not successful academically.

Most significantly, within the at-risk sample, successful students were distinct from their unsuccessful peers on a range of participatory behaviors in class and out, even controlling for racial differences. Successful students attend class and arrive on time; they come to class prepared; they participate in, rather than disrupt, classroom activities; and they do more homework and participate more actively in extracurricular activities. These findings were confirmed both from student self-reports and from teacher ratings of individual youngsters. For the most part, interactions with race or gender were not statistically significant, indicating the consistency of these findings for males and females alike and for all four racial/ethnic groups studied.

The results for "identification" were not as strong. Neither the number of times a student had changed school prior to eighth grade nor the student's perceptions of the warmth and supportiveness of the school environment was significantly related to academic performance. Successful, passing, and unsuccessful students did differ, however, on the extent to which they valued school-related learning. Identification measures had low to moderate correlations with indicators of classroom participation, but all were statistically significant.

Further results indicated that more successful at-risk students have parents who are more directly involved in their school work. Their parents monitor their homework more often, discuss school work, programs, and plans with them more frequently, and provide more extensive education-relevant resources at home. In contrast, parents' own contacts with the school were not related significantly to their youngsters' achievement.

Throughout the analysis, the comparison of the "successful" students with the "passing" group of youngsters has not been statistically significant, while the comparison of "unsuccessful" students with both of the higher groups has been pronounced. This may suggest that there are numbers of students whose school work is only modest but whose classroom behavior is of sufficient quality for them to attain modest goals or better. It is important that we do not let these "marginal" youngsters escape our attention.

Engagement and Risk: Conclusions

This investigation examined data on a nationwide sample of eighth-grade students collected by the National Center for Education Statistics as part of the National Educational Longitudinal Survey of 1988 (NELS:88). The survey includes an extraordinary breadth of information from questionnaires presented to students, teachers, parents, and principals, thus permitting the kind of process analysis conducted here. The richness of the database is being enhanced further by the collection of grade 10, 12, and post-secondary follow-up information on the same students.

From prior research and from the array of statistical findings presented in this report, the investigation yields three major conclusions and one principal recommendation for research.

Conclusion 1: To understand dropping out and educational risk generally we must examine the behaviors that differentiate students who are more successful in school from those who are less so rather than the status characteristics of large and diverse groups. Racial/ethnic groups, socioeconomic groups, and non-English speaking groups are not homogeneous. Not all inner-city minorities will necessarily fail or drop out of school and, at the other extreme, a number of suburban white students may be at risk educationally because they are not engaged in their school work.

In this light it is meaningful to talk about a set of behavioral risk factors--specific behaviors that can be identified and perhaps manipulated to reduce the likelihood that a student will fail in school and/or will leave without graduating. The most fundamental participatory behaviors are attending school and classes and satisfying the basic instructional requirements. Participatory behaviors also include initiative-taking in the classroom, participation in academic and nonacademic activities outside the regular class schedule, and even involvement in goal-setting and the governance of the school. These behaviors are only likely to continue through the grades if a youngster receives sufficient positive feedback from

school staff, parents, and/or friends, and if the attitudes and values that encourage the perseverance of participatory behaviors become internalized.

Conclusion 2: Risk behaviors have their roots in early school experience (or before). These early behaviors track, that is, they have early and later forms that evolve as the youngster's autonomy increases. They become self-perpetuating and perhaps more difficult to alter in each subsequent grade. It is an unfortunate aspect of human nature that individuals often strive to recreate that which they are familiar from prior experience even when the consequences are detrimental to their well-being. But data supporting the participation-identification model and research on the attributions students make about success and failure and the behaviors that ensue lead to the same conclusion: patterns of emotional and physical withdrawal established in the early grades are likely to persevere.

The students in this investigation were in eighth grade, roughly two-thirds of the way through their elementary-secondary years, and the association of engagement behavior with reading and mathematics performance (and with a host of other school-related outcomes) was firmly in place.

What might have been done to decrease the number of disengaged, low achieving students prior to this time? If it is at all possible to affect children's behavior patterns, and if these changes will persevere, then a two-part strategy is advisable. First (1) routine behavior assessments should be made of children whose status risk levels are high, beginning in the first years of school. The early-diagnosis concept has a close parallel in the medical world:

Medical researchers have developed a variety of "Health Risk Appraisals" to assess the individual's health risk status. The observation that most of the ten leading causes of death in adulthood are causally linked to personal health habits, and to a lesser degree to family history and environmental factors, has led to interest in

defining level of health based on the quantitative relationship between these [earlier] influences and the health problems they cause. (Breslow et al., 1985, p. 1-2)

Forms of nonparticipatory behavior seen in the elementary grades are described in the introductory section of this report. The finding that inattentive youngsters perform significantly below those who are disruptive suggests that priority should be given to identifying children who are withdrawn and distracted.

Second (2) interventions should be attempted in the early grades directed at increasing the youngsters' active participation in class even if concern with actual achievement levels is deferred. A number of rating scales are already available for identifying nonparticipatory behavior in the early grades. There is little systematic research on interventions to increase engagement, however. Several starting points for this work are described in the section of this report that follows.

Conclusion 3: More attention should be given by educators and researchers to encouraging the potential of "marginal" students. In the present investigation, these individuals constituted the "passing" classification. They exhibited a range of engagement behaviors that were much like those of their more successful peers: They came to school and class regularly, completed assignments and passed tests but without distinction, and most will graduate at approximately the modal age.

This study does not provide data about educational or social outcomes beyond the school years, nor does it examine the academic potentials of marginal students in the classroom. Nevertheless, it is important to ask whether there are students who, *given appropriate support and encouragement*, can attain adequate levels of learning and also accomplish important social and economic goals (for example, hold a job that requires some degree of literacy, vote or participate in community functions, raise a healthy family). It is also possible that the same individuals in the same settings but without the needed support

and encouragement may be destined for far more adverse outcomes. In our search for excellence and our concern about failure it is important that we also learn to identify those who may be somewhere in the middle but whose paths are influenced by the feedback and rewards they receive.

Can Engagement be Fostered by School Programs?

This investigation has viewed engagement as a set of *student* behaviors and habits. At the same time, it is recognized that these behaviors may be responsive to the demands and rewards of the school setting. The most central research question raised by this study is the following: **What are the class and school processes that can be manipulated to promote engagement among students at risk?** It is recommended that systematic research be undertaken that views engagement as a primary *outcome* of interest in contrast to much of the earlier work in which academic achievement was used as the dependent variable. Research on this topic should give priority to three considerations: (1) It should focus on the early school years; (2) It should examine factors that affect both the short-term stability and long-term perseverance of engagement; and (3) It should focus on the engagement or disengagement of *individual students* in contrast to larger groups identified by school organization or status characteristics.

If engagement is the dependent variable, then what independent variables should be examined? The most promising avenues to date are based on the principle that "smaller is better." Hamilton (1986), in a review of dropout-prevention programs, finds that one of the defining characteristics of successful programs is "they are intensive in the sense of being small, individualizing instruction, having low student-teacher ratios, and offering more counseling than ordinary schools" (p. 410).

Evidence supporting this proposition can be found from the institutional level to the level of small-group interactions. For example, Lindsay (1982) used data from a nationwide

sample of high schools and demonstrated that *school size* is inversely related to student participation in extracurricular activities and to attendance. In an earlier small-scale study, Willems (1967) examined the relationship between students' "sense of obligation" and a measure of school size, the number of students (S) relative to the number of activities (A). The results supported the study's hypothesis that when the S/A ratio is low, maintenance of a school activity "will require the participation of persons who might otherwise be seen as unsuitable or marginal" (p. 1250). A recent review of the effects of school size (Fowler, 1992) emphasizes the need for further research on enrollment as it relates to student participation both cross-sectionally and over a span of years.

A large-scale study of *class size* in the State of Tennessee also examined student participation as an outcome (Finn, Fulton, Zaharias, & Nye, 1989). In that well-controlled experiment, students who had attended small classes (about 15 students) in kindergarten through grade three were rated by their fourth grade teacher and compared with youngsters who had attended regular size classes (about 24 students). The small-class group not only had superior achievement scores but expended more effort, took more initiative, and exhibited less noncompliant behavior than students who had attended regular size classes.

Within the classroom, *instructional approaches* also affect student participation levels (see Kagan, 1990). This was demonstrated by Anderson and Scott (1978) in an observational study of seven high-school classrooms. Over the observation period, the researchers recorded the type of teaching method that was used in each time segment (lecture, classroom discourse, seatwork, group work, or audiovisual) and the proportion of time segments in which the students were engaged in task-relevant behavior. The findings were particularly germane to marginal students:

Students who have low aptitude and low academic self-concepts seem to be most affected by variations in teaching method. Teachers working with this type of student should consider emphasizing classroom discourse and seatwork methods. (p. 56)

Cooperative learning approaches (Slavin, 1983) also appear promising for encouraging engagement among all students.

Further research on the principle "smaller is better" is imperative. Additional correlational evidence is needed on the *interactions* of school and classroom characteristics that may affect pupil participation, both in the short and long term. And intervention studies should be undertaken that include the *early assessment of participation* and *persistent reinforcement* on the engagement of pupils who may be marginal or clearly at risk for school problems.

Other features of school organization have been proposed that may affect student engagement but, to date, are not supported by strong empirical evidence. In terms of *administrative practices*, arguments have been made for flexible school rules that do not alienate students and disciplinary procedures that are seen as fair and effective (Bryk & Thum, 1989; Gold & Mann, 1984; Miller, Leinhardt, & Zigmond, 1988; Newmann, 1981; Richardson et al., 1989; Wehlage & Rutter, 1986), an evaluation and reward system that is compatible with the abilities of the students (Natriello, 1984), and positions of responsibility for students (Newmann, 1981; Rutter et al., 1979). Data on many of these institutional practices are available in the NELS:88 database--a natural place to begin to explore their effects.

In terms of *curriculum and instruction*, recent scholarly writing suggests that some schools do not provide students with adequate "opportunity to learn." Stevens (1992) considered four aspects of opportunity: (a) content coverage--whether students are exposed to the "expected" curriculum for a particular subject area at a particular grade level; (b) content exposure--the time allowed for particular topics and the depth of coverage; (c) content emphasis--the topical emphasis and whether high or low order skills are emphasized; and (d) quality of instructional delivery--coherence of presentation. Her review of empirical studies on opportunity to learn plus a survey of the assessment practices of 142 school districts

yielded the conclusions that "Students' differences in academic achievement are not being related to an analysis of opportunity to learn" (p. 48) and that "Lack of opportunity to learn information hampers teachers' abilities to improve their teaching practices" (p. 49).

Opportunity to learn is not distributed evenly across American schools. For example, it has been suggested that schools serving largely minority, non-English-speaking, or low-SES populations do not offer the breadth and depth of coursework that may be found elsewhere (Oakes, 1990). Research has shown that disadvantaged schools make less frequent use of such practices as minimum competency tests, higher-level active learning methods and, ironically, certain remedial practices (MacIver & Epstein, 1990). Teachers in suburban schools are also more available to their pupils outside the regular schedule than teachers in inner-city schools (Rosenbaum, Rubinowitz, & Kulieki, 1986). This is just a sampling of results. But if these deficiencies originate from the expectation that students in certain schools are not capable of learning, then the likelihood of continued participation and successful school outcomes by these youngsters will be reduced; the expectation will become self-fulfilling prophecy.

In sum, priority should be given to understanding why so many students disengage from classes and school, and to efforts to prevent this from happening. The potential benefits of high levels of participation extend beyond eighth grade and beyond the formal years of schooling even if the youngster does not graduate with his/her high school class. An individual who returns to school to complete an equivalency degree may represent a particularly important educational success. Kaufman and Frase (1990) report that in 1989, an estimated 68.0% of American youngsters in the 18- to 19-year age range had received a formal high-school diploma. In the same year, 86.0% of 22- to 24-year-olds had "completed" high school by receiving a diploma or an alternative credential such as a GED. In other words, engagement behaviors are not just important in the early grades or during the high-school years, but continue to be important in post-school accomplishments as well.

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Appendix A

Details of Measures Used in the Study

The following pages give detailed information on how the measures used in Study I and Study II were obtained from the NELS:88 data files. Information on individual items is given in four codebooks for the base year data available from the U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics: The Student Component Data File User's Manual; the Parent Component Data File User's Manual; the Teacher Component Data File User's Manual; and the School Component Data File User's Manual. The prefix on individual item names is "BY" representing "base year data." "BYS" indicates an item was obtained from the Student Questionnaire; "BYP" indicates an item on the Parent Questionnaire; "BYT" indicates a response to the Teacher Questionnaire; and "BYSC" a response on the School Questionnaire.

The annotations to the right of the variable descriptions include the names of the measures as used in this report. Further information about how composites were determined and agreement levels between teachers and, where appropriate, between students and parents is available from the author on request.

VARIABLE NAME ON DATA FILE	DESCRIPTION	NOTES
ABSTDY	<p>TEACHER RPTD STUD WAS ABSENT OR TARDY Created by assigning a 1 on each of two items (BY1_4 and BYT1_5 -- student is frequently absent/tardy) if either teacher said "Yes," then summing these values. Before summing either item was set to missing only if both teachers were missing responses. After summing the variable was missing if either item was missing.</p> <p>Codes: 0 (Neither absent nor tardy) 1 (Either absent or tardy) 2 (Both absent and tardy)</p> <p>Format: 1.0; Missing value code: 9</p>	ABS-TARDY
ATRISK	<p>ONE IF STUDENT HAS AT LEAST ONE RISK FACTOR Created by summing dichotomized risk variables (e.g., RISK1, RISK2, and BYLM), and assigning a 1 to those students for whom this sum was at least one. Missing value was assigned to those whose sum was zero but who were missing any of three risk variables.</p> <p>Format: 1.0; Missing value code: 9</p>	Risk factors to enter Study II
ATTEND	<p>PROBLEMS WITH TARDINESS OR ABSENCE Created by first standardizing BYSS5C, BYS75, BYS76, BYS77, then averaging the 4 items. To avoid negative values, 50 was added to the result. (All items relate to frequency with which warning about misbehavior, or missing school, cutting/skipping class, late for school occurred.) Missing if 2 or more items were missing.</p> <p>Range: 49.377 to 54.491; Format: 6.3; Missing value code: 99.000 Comment: higher score means more problems.</p>	ATTEND- ANCE
BYFAMSIZ	<p>FAMILY SIZE Taken from student public release file Range: 2 to 10 Format: 2.0 Missing value code: 99</p>	
BYGRADS	<p>GRADES COMPOSITE Taken from student public release file Range: 0.5 to 4.0; Format: 3.1 Missing value code: 9.0</p>	

BYHOMEWK	<p>NUMBER OF HRS SPENT ON HOMEWORK PER WEEK Taken from student public release file</p> <p>Codes: 1 (None), 2(.50-1.99 hrs), 3 (2.00-2.99 hrs), 4 (3.00-5.49 hrs) 5 (5.50-10.49 hrs), 6 (10.50-12.99 hrs) 7 (13.00-20.99 hrs), 8 (21.00 and up)</p> <p>Format: 1.0; Missing value code: 9</p>	HOMEWORK
BYLM	<p>LANGUAGE MINORITY COMPOSITE</p> <p>Taken from student public release file</p> <p>Codes: 0 (No), 1 (Yes)</p> <p>Format: 1.0; Missing value code: 9</p>	Risk group LM
BYPSEPLN	<p>POSTSECONDARY EDUCATION PLANS</p> <p>Taken from student public release file</p> <p>Codes: 1 (Won't finish high school) 2 (Will graduate HS, but no further) 3 (will attend vocational, trade, or business school after HS) 4 (Will attend college) 5 (Will graduate college) 6 (Will attend higher level of school after college graduation)</p> <p>Format: 1.0; Missing value code: 9</p>	
BYP38B	<p>DID 8TH GRADER ATTEND NURSERY/PRE-SCHOOL</p> <p>Taken from parent public release file</p> <p>Recorded 2 to 0; set 'Don't Know' to missing</p> <p>Codes: 0 (No), 1 (Yes)</p> <p>Format: 1.0; Missing value code: 9</p>	
BYP38C	<p>DID 8TH GRADER ATTEND HEAD START PROGRAM</p> <p>Taken from parent public release file</p> <p>Recorded 2 to 0; set 'Don't Know' to missing</p> <p>Codes: 0 (No), 1 (Yes)</p> <p>Format: 1.0; Missing value code: 9</p>	
BYP38D	<p>DID 8TH GRADER ATTEND KINDERGARTEN PROGRAM</p> <p>Taken from parent public release file</p> <p>Recorded 2 to 0; set 'Don't Know' to missing</p> <p>Codes: 0 (No), 1 (Yes)</p> <p>Format: 1.0; Missing value code: 9</p>	
BYP40	<p>NO. OF TIMES 8TH GRADER CHANGED SCHOOLS</p> <p>Taken from parent public release file</p> <p>Codes: 0 (None), 1 (Once), 2 (Twice), 3 (Three times), 4 (Four times), 5 (Five times or more);</p> <p>Format: 1.0; missing value code: 9</p>	Moves

BYP44	8TH GRADER EVER HELD BACK A GRADE Taken from parent public release file Recoded 2 to 0 Codes: 0 (No), 1 (Yes); Format 1.0; Missing value code: 9	Retentions
BPY49A	CHILD IN BILINGUAL/BICULTURAL ED PROGRAM Taken from parent public release file Recoded 2 to 0; set 'Don't Know' to missing Codes: 0 (No), 1 (Yes) Format: 1.0; Missing value code: 9	
BYQWT	BASE YEAR QUESTIONNAIRE WEIGHT Taken from student public release file Range: 5.174 to 836.909; Format: 7.3	Sampling weight
BYES	SOCIO-ECONOMIC STATUS COMPOSITE Taken from student public release file Range: -2.97 to 1.922; Format: 6.3; Missing value code: 99.000	
BYS38A	HOW OFTEN PARENTS CHECK ON R'S HOMEWORK Taken from student public release file Reversed scale & recoded 'never' to 0...'often' to 3 Codes: 0 (Never), 1 (Rarely), 2 (Sometimes), 3 (Often); Format: 1.0; Missing value code: 9	CHK-HOMEWORK
BYS42A	NO. OF HOURS R WATCHES TV ON WEEKDAYS Taken from student public release file Codes: 0 (Don't watch TV) 1 (Less than 1 hr/day) 2 (1-2 hours) 3 (2-3 hours) 4 (3-4 hours) 5 (4-5 hours) 6 (Over 5 hrs/day) Format: 1.0; Missing value code: 9	
BYS42B	NO. OF HOURS R WATCHES TV ON WEEKENDS Taken from student public release file Codes: 0 (Don't watch TV) 1 (Less than 1 hr/day) 2 (1-2 hours) 3 (2-3 hours) 4 (3-4 hours) 5 (4-5 hours) 6 (Over 5 hrs/day) Format: 1.0; Missing value code: 9	

BYS80	<p>HOW MUCH READING DO YOU DO ON YOUR OWN Taken from student public release file Codes: 0 (None), 2 (1 hr or less per week), 2 (2 hrs), 3 (3 hrs), 4 (4-5 hrs) 5 (6 hours or more per week) Format: 1.0; Missing value code: 9</p>	Reading
BYTXHNR	<p>HISTORY/CIT/GEOG NUMBER RIGHT Taken from student public release file Range: 1 to 30 Format: 2.0; Missing value code: 99</p>	
BYTXMNR	<p>MATHEMATICS NUMBER RIGHT Taken from student public release file Range: 1 to 40 Format: 2.0; Missing value code: 99</p>	
BYXRNR	<p>READING NUMBER RIGHT Taken from student public release file Range: 1 to 21 Format: 2.0; Missing value code: 99</p>	
BYXSNR	<p>SCIENCE NUMBER RIGHT Taken from student public release file Range: 1 to 25 Format: 2.0; Missing value code: 99</p>	
CLSPERC	<p>CLASS PERCEPTIONS OF RESPONDENT Created by averaging BY556A, BY556B, BY556C, BY556D, after reversing the scale. (Each item asks how much the student feels his/her classmates perceive him/her as popular, athletic, good student, important.) Missing if all missing. Range: 0.00 to 2.00 Format: 4.2; Missing code: 9.00 Comment: higher means more positive perception</p>	PERCEPT- IONS
DISCCNSL	<p>DISCUSS W/COUNSELOR ABT CRSES, PLNS, ETC. Created by first standardizing BY550C, BY551CA, BY551DA, BY551EA, then averaging the 4 items. To avoid negative values, 50 was added to the result. (All items relate to frequency with which student discusses various topics with a counselor.) Missing if 2 or more of the 4 items are missing. Range: 49.269 to 52.348; Format: 6.3 Missing value code: 99.000 Comment: higher means more frequent discussion</p>	DIS- COUNSELOR

DISCOTH	<p>DISCUSS W/OTHER ADULTS ABT SCHOOL, ETC. Created by first standardizing BYSS0D, BYSS0E, BYSS0F, BYSS1CB, BYSS1CC, BYSS1DB, BYSS1DC, BYSS1EB, BYSS1EC then averaging the 9 items. To avoid negative values, 50 was added to the result. (All items relate to frequency with which student discusses various topics with a teacher, relative, or other adult.) Missing if 5 or more of the 9 items were missing. Range: 48.702 to 51.302; Format: 6.3 Missing value code: 99.000 Comment: higher means more frequent discussion</p>	DIS-OTHER
DISCPAR	<p>DISCUSS W/PARENTS ABT SCHOOL, PLNS, ETC. Created by first standardizing BYSS0A, BYSS0B, BYSS36A, BYSS36B, BYSS36C, then averaging the latter three and the greater of BYSS0A or BYSS0B. To avoid negative values, 50 was added to the result. (All items relate to frequency with which student discusses with father/mother planning H.S. program, school program, activities, or studies.) Missing if 2 or more of the 4 items were missing. Range: 47.995 to 51.070; Format: 6.3 Missing value code: 99.000 Comment: Higher means more frequent discussion</p>	DISCUSS
EXTCURR	<p>DEGREE OF PARTICIPATION IN EXTRACURRS Created by recoding BYSS82A to BYSS82U to 1 (if student was a member or officer in the activity) or 0 (if did not participate), then summing the 21 items. Variable was recoded into 4-value, integer variable. Missing if student reported more than 10 activities or if responses missing to all 21 items. Codes: 0 (Participated in no extracurriculars) 1 (Participated in 1 or 2 activities) 2 (Participated in 3 or 4 activities) 3 (Participated in 5 to 10 activities) Format: 1.0; Missing value code: 9</p>	EXTCURR
G8URBAN	<p>URBANICITY COMPOSITE Taken from student public release file Codes: 1 (Urban), 2 (Suburban), 3 (Rural) Format: 1.0; Missing value code: 9</p>	

<p>HIS_PERF</p>	<p>PERFORMANCE ON HISTORY TEST Created by classifying scores into one of three levels: "Successful" scored better than the overall test mean "Passing" scored above -.5 SD, but not above mean "Unsuccessful" scored at or below -.5 SD Codes: 2 = successful 1 = passing 0 = unsuccessful Format: 1.0; Missing value code: 9</p>	
<p>HOMERES</p>	<p>NUMBER OF STUDY RESOURCES IN THE HOME Created by summing "Have's" on BY35A to BY35G. (Each item asks whether or not the student's home has dictionary, encyclopedia, atlas, etc.) Missing if all missing. Range: 0 to 7; Format: 1.0; Missing value code: 9</p>	<p>RESOURCES</p>
<p>MISBEHAV</p>	<p>PROBLEMS WITH MISBEHAVING Created by averaging BY55A, BY55E, BY55F (Frequency with which student sent to office/received warning about misbehavior, got into fight.) Missing if 2 or more missing. Range: 0.00 to 2.00; Format: 4.2 Missing value code: 9.00 Comment: higher means more problems</p>	<p>BEHAVIOR</p>
<p>NOTENGAG</p>	<p>TEACHER RPTD STUD NOT ATNTVE/MISBEHAV, ETC. Created by combining teachers' responses to 3 items (BYT1_3 -- student rarely completes homework; (BYT1_6 -- student inattentive in class; BYT1_8 -- student frequently disruptive). The mean of both teacher's responses to each item was computed, then these means were summed. Before summing item was missing if either teacher missing. After summing variable was missing if two or more items were missing. Range: 0.00 to 3.00; Format: 4.2; Missing value code: 9.00 Comment: higher means more problems w/engagement</p>	<p>NOT-ENGAGED</p>
<p>P_TALK_R</p>	<p>FREQ W/WH PAR TALKS TO R ABT SCH/PLNS Created by averaging BYP66, BYP67, BYP68 (frequency with which parent talks to student about school experiences, high school/post high school plans). Missing if two or more items missing. Range: 0.00 to 3.00; Format: 4.2 Missing value code: 9.00 Comment: higher means more frequent discussion</p>	<p>PAR-TALK</p>

PASWITH	<p>TEACHER RPTD STUD PASSIVE/WITHDRAWN Created by taking the mean of the two teacher's responses on BYT1_7 (student is exceptionally passive/withdrawn). Missing value if either teacher missing a response. Codes: 0, .5, 1; Format: 3.1 Missing value code: 9.0</p>	WITH-DRAWN
PCONTACT	<p>PAR CONTACTED SCH ABT ACADEMICS Created by summing responses to BYP58A and BYP58B (frequency with which parent contacted school about student's academic performance or academic program). If either item was missing, then this variable was set to missing. Range: 0.00 to 3.00; Format: 4.2 Missing value code: 9 Comment: higher means more frequent contact</p>	PAR-CONTACTS
PREPARE	<p>UNPREPAREDNESS FOR CLASSES Created by averaging BYS78A, BYS78B, BYS78C (frequency with which student comes unprepared for class). Missing if 2 or more missing. Range: 0.00 to 3.00; Format: 4.2 Missing value code: 9.00 Comment: higher means more problems w/preparedness</p>	PREPARATION
PTAINVOL	<p>PAR INVOLVEMENT IN SCH ACTIVITIES Created by summing 'yeses' on BYP59A, B, C, D, E: 5 items asking whether or not parent belonged/attended/participated in PTA organizations, or otherwise volunteered at the school. Missing value only if all 5 items missing. Range: 0 to 5; Format: 1.0; Missing value code: 9 Comment: higher means more parent involvement</p>	PAR-INVOLVE
RACE	<p>COMPOSITE RACE Taken from student public release file Codes: 1 (Asian, Pacific Islander) 2 (Hispanic, regardless of race) 3 (Black, not Hispanic) 4 (White, not hispanic) 5 (American Indian, Alaskan Native) Format: 1.0; Missing value code: 9</p>	
RISK1	<p>URBAN MINORITY Created by assigning the value one to those whose RACE was Hispanic, Black, or American Indian and whose value on G8URBAN was 1 (urban). Others who were not missing data on either RACE or G8URBAN were assigned the value zero. Format: 1.0; Missing value code: 9</p>	Risk group UM

RISK2	<p>LOW SES/BIG FAMILY Created by assigning the value one to those whose value on BYFAMSIZ was greater than 4 and who were also in the lowest third of the BYSES distribution. Others who were not missing data on either BYFAMSIZ or BYSES were assigned the value zero. Format: 1.0; Missing value code: 9</p>	Risk group LS
RM_PERF	<p>PERFORMANCE ON THE READING AND MATH TESTS Created by classifying scores into one of three levels: "Successful" scored better than the overall test mean on both reading and math tests; "Passing" scored above -.5 SD on both reading and math tests, but not above mean on both "Unsuccessful" scored at or below -.5 SD on either or both reading and math tests; Codes: 2 = successful 1 = passing 0 = unsuccessful Format: 1.0; Missing value code: 9</p>	Performance classification
SCI_PERF	<p>PERFORMANCE ON SCIENCE TEST Created by classifying scores into one of three levels: "Successful" scored better than the overall test mean; "Passing" scored above -.5 SD, but not above mean; "Unsuccessful" scored at or below -.5 SD; Codes: 2 = successful 1 = passing 0 = unsuccessful Format: 1.0; Missing value code: 9</p>	
SEX	<p>COMPOSITE SEX Taken from student public release file Codes: 1 (Male, 2 (Female); Format: 1.0; Missing value code: 9</p>	
STU_TCHR	<p>FEELING B/N STUDENTS AND TEACHERS Created by averaging BYSS9A, BYSS9B, BYSS9G, BYSS9H, BYSS9I, BYSS9J, after reversing the scale for all but BYSS9I. (Each item measures the extent to which the student agrees with statements about school climate, teacher behaviors, etc.) Missing if 3 or more of the 6 items were missing. Range: 1.00 to 4.00; Format: 4.2 Missing value code: 9.00 Comment: higher means more positive stud/tchr feelings</p>	STU-TEACHER

UTILITY	PERCEIVED USEFULNESS OF COURSES Created by averaging BY69C, BY70C, BY71C, BY72C, after reversing the scale. (Each item asks how useful the student feels math, English, social studies, or science will be in their future.) If 2 or more were missing then this variable was set to missing. Range: 1.00 to 4.00; Format: 4.2 Missing value code: 9.00 Comment: higher means more useful	UTILITY
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Appendix B
Standard Deviations and Correlations of Measures

The values below are the pooled within-cell standard deviations and correlations among the sets of outcome measures used in Study I and Study II. In Study I, the analysis-of-variance design comprised 32 cells formed by crossing gender, 4 racial/ethnic groups, and 4 participation groups. In Study II, the design comprised 24 cells formed by crossing gender, race-ethnicity, and 3 achievement levels. In addition, the data of each study were expressed as deviations from school means. Thus the standard deviations and correlations below are "controlled" for school differences as well as for the three primary factors of the respective study. The values are also "weighted" (using the sampling weights) to be consistent with the results of the multivariate analyses presented in the main body of this report.

STUDY I (14,795 d.f. within groups):

correlations

	READING	MATH	SCIENCE	HISTORY
READING	1.000			
MATH	0.635	1.000		
SCIENCE	0.640	0.638	1.000	
HISTORY	0.671	0.616	0.650	1.000
<u>standard dev.</u>	4.131	7.252	3.842	4.649

STUDY II

Classroom and School Academic Participation measures (3663 d.f. within groups):

correlations

	ATTEND- ANCE	PREPARA- TION	BEHAVIOR	ABS-TARDY	WITH- DRAWN	NOT ENGAGED
ATTENDANCE	1.000					
PREPARATION	0.268	1.000				
BEHAVIOR	0.360	0.292	1.000			
ABS-TARDY	0.372	0.140	0.242	1.000		
WITHDRAWN	0.069	0.045	-0.049	0.088	1.000	
NOT ENGAGED	0.256	0.276	0.429	0.453	0.046	1.000
standard dev.	0.648	0.668	0.465	0.555	0.207	0.729

Identification with School measures (4028 d.f. within groups):

correlations

	MOVES	STU-TEACHER	PERCEPTIONS	UTILITY
MOVES	1.000			
STU-TEACHER	-0.026	1.000		
PERCEPTIONS	-0.030	0.229	1.000	
UTILITY	-0.006	0.254	0.131	1.000
standard dev.	1.617	0.430	0.407	0.545

Participation Outside the Regular School Program measures (4186 d.f. within groups):
correlations

	HOMEWORK	EXTCURR
HOMEWORK	1.000	
EXTCURR	0.144	1.000
standard dev.	1.242	0.863

Parent Involvement in Student's School Work measures (4459 d.f. within groups):
correlations

	CHK-HOMEWORK	DISCUSS	PAR-TALK	RESOURCES
CHK-HOMEWORK	1.000			
DISCUSS	0.266	1.000		
PAR-TALK	0.151	0.216	1.000	
RESOURCES	0.127	0.213	0.109	1.000
standard dev.	0.895	0.655	0.600	1.432

Parents' Own Involvement measures (4017 d.f. within groups):

correlations

	PAR-CONTACTS	PAR-INVOLVE
PAR-CONTACTS	1.000	
PAR-INVOLVE	0.272	1.000
standard dev.	1.251	1.108

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