Students' Attachment and Academic Engagement: The Role of Race and Ethnicity

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Students' attachment to school and their academic engagement are important, yet understudied, aspects of the educational experience. In their study, the authors examined whether students of different racial-ethnic groups vary in attachment and engagement and whether properties of schools (e.g., racial-ethnic composition) influence these outcomes over and above individual characteristics. Using multilevel models with a sample of youths from the National Longitudinal Study of Adolescent Health, they found important differences across racial-ethnic groups in both attachment and engagement. The racial-ethnic composition of schools is an important factor in students' attachment but not engagement. Moreover, the extent of racial and ethnic differences in both outcomes varies across high schools. These findings are discussed in terms of the challenges facing racially and ethnically diverse schools.

The educational experience of American middle school and high school students is a multifaceted phenomenon that encompasses far more than academic achievement and degree attainment, which have been the primary foci of sociological research. Other important aspects of the educational experience include daily participation in school—showing up, paying attention in class, making an effort to learn, and completing homework—as well as students' feelings about their school—their sense of belonging and membership in the social order of the school. These latter, and much less understood, aspects of the educational experience also have important consequences in adolescents' lives. For example, academically engaged students and those who feel a part of their school are less likely to drop out of high school and to engage in problem behavior and delinquency (Bryk and Thum 1989; Crosnoe, Erickson, and Dornbusch forthcoming; Farkas et al. 1990; Hirschi 1969; Jenkins 1995; Newmann 1981; Newmann, Wehlage, Lamborn 1992). On a more general level, these aspects are fundamental components of the "good student" role during adolescence, with implications for

the concurrent psychological well-being of youths. This role may also set the stage for successful adjustment and functioning as members of other institutions later in life.

The tendency to focus on achievement also characterizes research on racial-ethnic issues in education. The so-called race gap, the lower achievement of minority students compared to whites, has justifiably received a great deal of attention (Mickelson 1990; Roscigno 1998, 2000; Steele and Aronson 1995; Steinberg, Brown, and Dornbusch 1996). Yet broader social concerns about educational disparity have highlighted other aspects of the educational experience, such as the full participation of minority adolescents in student life and their feelings of comfort and belonging in academic institutions. As we discuss in more detail later, these broader experiences are a function of students' backgrounds, but also of the characteristics of the schools they attend. The composition of the school—the general makeup of the student body—and its interpersonal climate—how well students get along and feel comfortable with each other—are crucial, as has been noted frequently in public debates on educational inequality. For example, a key foundation of *Brown v. Board of Education of Topeka* (1954), the landmark Supreme Court case that ruled racial segregation of schools unconstitutional, was the social science research statement presented to the court, focusing specifically on the social psychological effects of the "intolerable social separation" between racial groups. Thus, we must pay attention to educational experiences as a whole to reduce inequality in a variety of education-related outcomes.

The educational experiences of adolescents occur not in a vacuum, but within the school institution. Schools influence the academic development of students by structuring curricula and learning activities (Bennett and LeCompte 1990), but they also shape the social development of students by organizing peer relations (Crosnoe 2000). As developmental theory, such as ecological and life-course perspectives, has increasingly emphasized the important role of larger contexts in patterning the trajectories of youths (Bronfenbrenner and Morris 1998; Elder

1998), researchers have begun to examine how variations in school resources, structures, and other factors affect students' outcomes (e.g., Lee and Bryk 1988, 1989; Raudenbush and Bryk 1986). This line of research has uncovered important school-level effects on academic achievement, but has rarely attended to other important aspects of the educational experience.

Our purpose was to bring together these three themes (the need to understand nonachievement aspects of the educational experience, the importance of examining the role of race-ethnicity in education, and the value of studying school effects) in one study. We examined, both conceptually and empirically, academic engagement and school attachment as important components of students' educational experiences and addressed whether these experiences differ by race and ethnicity. We also examined whether school-level factors influence engagement and attachment and whether they might reduce ethnic-racial gaps in these outcomes. To pursue these goals, we drew upon the advantages of multilevel modeling (Bryk and Raudenbush 1992) and the multicontext data of the National Longitudinal Study of Adolescent Health (AddHealth).

In this article, we begin by carefully delineating what we mean by school attachment and engagement. Next we consider how these two components of the educational experience may be influenced by the individual backgrounds of students and how they may be embedded in the larger academic institution. Our empirical analyses address white, Hispanic American, and African American students' attachment and engagement in middle schools and high schools.

ATTACHMENT AND ENGAGEMENT

Conceptualizations

A variety of behaviors, attitudes, and feelings have been studied empirically under the concept of engagement (see, e.g., Connell, Spencer, and Aber 1994; Lee and Smith 1995; Newmann 1992; Skinner, Wellborn, and Connell 1990; Smerdon 1999; Steinberg

et al. 1992). We believe that research in this area would benefit greatly from a more consistent operationalization of engagement, best achieved by a more thorough conceptual consideration of engagement and related topics. We suggest the need to distinguish between an affective component and a behavioral component of the educational experience.

First, the affective component, school attachment, refers to the extent to which students "feel" that they are embedded in, and a part of, their school communities (Moody 1997; Spencer and Markstrom-Adams 1990). Attachment is distinct from, though often confused with, valuing education. Whereas the former refers to students' feelings about their specific schools, the latter indicates the importance that students place on getting an education and their perception that education will bring benefit to their lives, economically or otherwise (Mickelson 1990). Empirically, these concepts have sometimes been combined to represent orientation to school or valuing school (Crosnoe 2001; Steinberg et al. 1992). Second, engagement refers to behaviors that broadly represent students' participation. Examples of engagement behaviors include trying hard in class, participating in discussions, completing homework, coming to class, being attentive in class, avoiding distracting behavior, and taking part in extracurricular activities.

This distinction is not novel. Finn (1989; see also Finn and Rock 1997; Finn and Voelkl 1993) also emphasized the distinction between the affective, which he called "identification" with the school, and the behavioral, which he called "participation." Others have stressed a more psychological investment in and enthusiasm for learning among engaged students (Newmann 1992).

Theoretically, engagement and attachment are related to each other and to achievement. A student who feels more embedded in his or her school is more likely to exert effort, while one who participates in school and classroom activities is more likely to develop positive feelings about his or her school. Students who are engaged and attached to their schools do better academically, but higher achievement is also likely to

enhance future efforts and draw students more closely into the school order. (For one theoretical model linking attachment, engagement and achievement, see Finn 1989.)

A range of studies, using the many different operationalizations of engagement and attachment, have documented the positive associations among engagement, attachment, and academic achievement (Connell et al. 1994; Finn and Rock 1997; Finn and Voelkl 1993; Lamborn et al. 1992; Lee and Smith 1995; Roscigno and Ainsworth-Darnell 1999; Skinner et al. 1990; Steinberg et al. 1992), although Smerdon (1999) noted that the effect of engagement on gains in math and reading achievement, as measured by standardized test scores, is modest once track placement, past grade retention, and other factors are controlled. Newmann et al. (1992) also found that engagement is not as strongly connected to achievement in empirical tests as it should be according to theory. Yet, however modest the connections are at one point in time or over a short duration, their interconnections over an entire educational history have the potential to produce important cumulative differences among students.

We believe that attachment, engagement, and achievement are interconnected in complex ways over the course of the educational career, but it is not our aim to disentangle them here. In this article, we narrowly focus on the two factors that have received less empirical attention and attempt to deepen an understanding of them. While a wealth of studies has examined school-level effects on *achievement* (e.g., Lee and Bryk 1988, 1989; Raudenbush and Bryk 1986) and racial-ethnic differences in achievement (e.g., Lee and Bryk 1989; Roscigno 1998, 2000), far less activity has centered on attachment and engagement.

Why do sociologists need to gain a better understanding of school attachment and engagement? One reason lies in the connections that both may have to other important outcomes noted earlier, including academic achievement, problem behaviors, and dropping out of school. Another reason is that students' feelings and behaviors may serve as alternative entry points for efforts to improve

learning. Keeping at-risk students involved in school, for example, is an essential part of many dropout prevention efforts (Finn and Rock 1997). This may be especially true for minority students, according to Connell et al. (1994:504), who argued that engagement is "the most proximal point of entry for reform efforts designed to enhance the educational chances of poor African-American youth." Yet we also believe that attachment and engagement are important to study as ends in themselves. Just as social research on work and occupations extends beyond income to study effort, job satisfaction, and feelings of alienation (Abbott 1993), educational researchers should more actively consider broader aspects of education, including students' efforts and alienation. Such research broadens our knowledge about psychological and social well-being during adolescence and illuminates the complex processes of adolescent development.

The Individual Backgrounds of Students

Efforts to explain differences in students' attachment to and engagement in school have focused predominantly on the individual-level characteristics of students and their family backgrounds, including race and ethnicity. Of particular concern in recent educational research has been the question of whether minority students are less engaged academically and feel more alienated from the student body than do other students (Steinberg et al. 1996). According to Fordham and Ogbu (1986), African Americans and Hispanic Americans are less engaged in school than whites because they perceive fewer returns to education and see limited occupational opportunities in their futures. According to this perspective, students from these minority groups resist what they see as structures, such as education, that are imposed on them by the dominant group and avoid the appearance of "acting white" in their efforts at school (see also Ogbu 1997). Whether African American and Hispanic American students actually hold these perceptions about school and their future opportunities has been hotly contested

(see Ainsworth-Darnell and Downey 1998), but both proponents and opponents of this perspective have usually agreed that students in these minority groups put forth less effort at school. Moreover, minority students, especially African Americans, are generally thought of as feeling less embedded in schools and less close to their teachers (Hudley 1997; Moody 1997; Steele 1992).

Despite these commonly held beliefs, past research on engagement-related behaviors in middle school and high school have produced mixed evidence on racial-ethnic differences. A number of studies have reported higher rates of absenteeism among Hispanic American students than among African American and white students (Bowen and Bowen 1999; Bryk and Thum 1989; Finn and Rock 1997). In a study of California and Wisconsin schools, Steinberg et al. (1996) also found that African American and Hispanic American students spent less time doing assigned homework than did white students. Similarly, Ainsworth-Darnell and Downey's (1998) analysis of students in the National Education Longitudinal Study (NELS) found that African Americans reported spending less time on homework than whites, though African Americans' self-ratings' of trying hard in class were actually higher than those of whites. African Americans were also more likely to report that others thought of them as good students. On the other hand, Smerdon (1999), who also examined white and African American students in NELS, found no racial differences in engagement as measured by a composite of attendance, class preparedness, and time spent on homework.[1]

We seek to broaden the evidentiary base on this issue. Like Smerdon (1999), we created a measure of engagement based on a set of interrelated behaviors in an attempt to capture an overall sense of academic engagement. Our measure, which combines a number of preferred elements (showing up, paying attention, and completing homework), overlaps with many of the behaviors examined in the studies just discussed. Whereas Smerdon (1999) and Ainsworth-Darnell and Downey (1998) both used national data to examine the engagement behaviors of African American and white 10th graders, we

widened the focus on engagement in two ways: by including Hispanic American students and by using nationally representative data with a broader age range (7th–12th graders). Furthermore, we also moved beyond participatory behaviors to consider feelings of belonging. Public concern over the levels of school attachment among minorities has not been matched by empirical activity, and we attempted to remedy this deficiency in our study. By exploring both behavioral and psychological aspects of schooling, we hoped to inform a broader understanding of the educational experience of minority adolescents.

Of course, attachment and engagement, and racial-ethnic differences in both, are closely related to other individual and family-related factors. Keeping in mind the variability in the definitions of these concepts across studies, we found a few patterns in such factors. In general, younger students, boys, adolescents from higher socioeconomic backgrounds, and adolescents with more authoritative parents report greater attachment to school or valuing of education (Moody 1997; Steinberg et al. 1992). As is the case for school attachment, adolescents from families of higher socioeconomic status (SES) are more likely to be engaged in academic activities and are less likely to drop out of school (Ainsworth-Darnell and Downey 1998; Bryk and Thum 1989; Lamborn et al. 1992; Smerdon 1999). In contrast to the findings for attachment, however, girls tend to be more engaged in class, attentive to teachers, and prepared than boys and to have better work habits (Farkas et al. 1990; Finn and Rock 1997; Smerdon 1999). Emotional support from parents, parental involvement in education, and authoritative parenting all promote academic engagement (Connell et al. 1994; Rumberger et al. 1990; Steinberg et al. 1992).

Building on this past research on the individual-level underpinnings of students' attachment and academic engagement, we examined further the links between race-ethnicity and educational experiences. We first asked whether white, African American, and Hispanic American adolescents differ in their levels of attachment to and engagement in

school. Next, paying attention to the social institution in which education occurs, we asked whether the relation between race-ethnicity and these two academic outcomes varies across schools. This latter question, on school variation in racial-ethnic differences, has not previously been examined. The impact of being a minority student on attachment or engagement may be stronger in some schools and weaker in others. To study this question requires a shift to the level of school organization and culture while continuing to take into account individual characteristics. This shift, which has been facilitated by recent advances in methodology and large-scale data collection, allowed us to contextualize attachment and engagement in school environments.

Attachment and Engagement as Embedded in Schools

A major proposition of our study was that the characteristics of schools influence students' engagement and attachment. The educational experiences of young people are firmly embedded within the schools they attend. As an institution, schools are organized around curricular demands, but they also provide a social milieu, involving interactions with peers, teachers, and administrators and the expectations and values of all three. This multifaceted environment shapes students' feelings and behavior (Coleman 1961; Tinto 1993). Moreover, school attachment is, by its very nature, about whether one feels a part of one's school. The people who populate and work at the school, the activities a school offers, and the benefits a school grants are all intricately related to how a student feels about school and whether he or she plays an active role in it. As an issue of identification, school attachment is as much about what a school is like as it is about who the student is. Furthermore, if engagement can be thought of as "playing by the rules" of school, then it is also related to the social, structural, and even peripheral characteristics of the school.

Since little is known about school effects on students' attachment and academic engagement, we had to draw on evidence of related academic processes to form specific

expectations about how schools may influence these two particular educational outcomes. In addition to posing the question of whether the effect of race and ethnicity on students' attachment and engagement varies across schools, we asked two additional questions that focus directly on the characteristics of school environments. Do the characteristics of schools, especially the racial-ethnic composition of the student body and the teaching staff, influence students' attachment and academic engagement? And do the characteristics of schools, especially those dealing with race-ethnicity, account for any of the variation across schools in the effects of race-ethnicity on attachment and engagement?

Given our focus on race-ethnicity issues, we are primarily interested in the racial-ethnic composition of schools. We expect that the racial-ethnic composition of both the student body and the teaching staff are important factors in attachment and engagement. Since the time of *Brown,* educational research has documented the pervasive influence of schools' racial-ethnic composition on the academic and social lives of students. Although this body of empirical work is large and contains its share of inconsistencies, studies have generally found that interracial contact in schools promotes more positive racial attitudes (Ellison and Powers 1994; Marini and Johnson, forthcoming) and greater interracial sociability and friendship (Hallinan and Smith 1985; Johnson and Marini 2000; Patchen 1982; Schofield 1979). Furthermore, the academic achievement of minority students improves in integrated schools (Bankston and Caldas 1996; Crain and Mahard 1978, 1983; Entwisle and Alexander 1992; Lee, Bryk, and Smith 1993; Roscigno 1998; Wortman and Bryant 1985). These positive effects are not limited to adolescence. Indeed, attending school with whites enhances the ability of minorities to function with whites in social, academic, and work environments across the life course (Braddock 1985).

Despite these beneficial outcomes, attending school with greater proportions of students from other racial-ethnic groups may pose additional challenges to students, making it more difficult to feel a part of the school community and discouraging their engagement behaviors. Like adults, adolescents show strong in-group preferences in social interaction and the formation of friendships (Hallinan and Williams 1987, 1989; Johnson and Marini 2000; Schofield 1979). Race and ethnicity are highly salient aspects of both social and personal identity, and similarity with one's classmates along such dimensions is no doubt important in generating a sense of belonging and membership in a school.

Unfortunately, prior research on this intuitive link between racial-ethnic composition and students' feelings of belonging has been limited. In a study of "at-risk" (mostly minority) students, Finn and Voelkl (1993) found that school racial-ethnic composition predicted students' perceptions of school community, a measure bearing some similarity to school attachment. (This composite measure is based on students' assessments of the quality of teacher-student relationships and whether the school has "real school spirit.") The at-risk students who attended schools with higher proportions of minorities evaluated their school communities more positively. Composition effects on school attachment have not been examined in a more general population of students.

School racial-ethnic composition may influence engagement behaviors in a number of ways. Being surrounded by students of one's own group may prevent disengagement indirectly through school attachment. When students do not feel comfortable at school or socially integrated with other students, they may withdraw—skipping classes more frequently and investing less in academic activities. Student composition may also affect engagement more directly. If an adolescent feels different from his or her fellow students, he or she may avoid interactions with others by skipping class. Another direct effect on engagement is specific to minority students and runs counter to earlier assertions that minority students benefit from attending school with whites. As the minority population increases, so, too, does the probability of minority students finding same-race models, such as highly motivated or achieving minority students, for engagement. At the same time, minority students in such environments are also more likely to enter academic cur-

riculum tracks, which tend to draw students into school and classroom activities (Crosnoe forthcoming; Hallinan 1992).

Empirical evidence on the influence of school racial-ethnic composition on academic engagement has been limited as well. Lee and Smith (1995) found no effect of attending a school with a high concentration of minority students (over 40 percent) on the engagement of 10th-grade students, but because they controlled a measure of 8th-grade engagement, it is not possible to ascertain whether there were baseline differences in engagement across schools with different racial compositions. In their study of at-risk students, Finn and Voelkl (1993) found that the percentage of minorities in a school increased academic disengagement. In that study, students attending schools with a higher percentage of minority students had lower levels of engagement, as measured by absenteeism, tardiness, failure to complete homework, and lack of attentiveness in class. Additional research is needed on more general populations of students, at various ages, that uses measures of engagement that are consistent with the conceptualization outlined earlier.

Beyond the composition of the student body, the composition of the teaching staff may shape students' engagement behaviors and feelings of attachment. Students' sense of belonging may be aided by having teachers who resemble them. Race-ethnicity may be one of the few dimensions along which students can identify with teachers. We are forced to speculate here, since so little has been done to explore this possibility. The racial-ethnic composition of teachers at a school has received even less attention than student composition in prior research on students' attachment and engagement. To our knowledge, Finn and Voelkl's (1993) is the only one to address teacher composition effects. That study found that for African American students, having a small proportion of African American teachers was associated with a weaker sense of school community; similarly, for white students, having a large proportion of African American teachers was associated with a weaker sense of school community. If these findings apply to stu-

dents in general, they suggest that having more teachers of one's own group promotes affective ties to school. In summary, we expect that students who attend schools with greater proportions of students of their own race-ethnicity and who have a greater proportion of teachers of their own race-ethnicity will be more highly engaged and more attached to their schools.

A number of other school characteristics bear on students' attachment and academic engagement, and because they may also be linked to the racial-ethnic composition of the student body and teaching staff, we took these characteristics into account. For example, students in Catholic and other private schools have lower absenteeism rates, are less likely to drop out, and have higher levels of math achievement than do students in public schools (Bryk and Thum 1989; Lee and Bryk 1988, 1989). Furthermore, Catholic school enrollment is often found to be especially beneficial to minority students (Coleman and Hoffer 1987).

Minority students are more often in larger schools, and school size is itself related to a number of educational outcomes, including absenteeism, dropping out, academic achievement, and a range of engagement behaviors (Finn and Voelkl 1993; Fowler and Wahlberg 1991; Lee et al. 1993; Lee and Smith 1995). The racial-ethnic composition of schools also varies regionally (Orfield 1993). Although the relation between school size and students' attachment has not been studied as extensively, Finn and Voelkl (1993) did find that disadvantaged students in larger schools, compared to similar students in smaller schools, score lower on a composite measure of school community.

The average SES of the student body, above and beyond a student's own SES, has been linked to a variety of student outcomes, including academic achievement, absenteeism, and dropping out (Bryk and Thum 1989; Fowler and Wahlberg 1991; Lee and Bryk 1989). The socioeconomic composition of schools may influence student outcomes through a number of mechanisms, including the level of fiscal and human resources of a school (Lee et al. 1993). Again, because of the close relationship between the SES level

of a school and the racial composition of its student body and teaching staff (Kozol 1991), we took this school-level factor into account.

Finally, the academic atmosphere of the school may influence students' engagement behaviors and feelings of attachment to school. Schools in which the average achievement is high may be able to sustain an atmosphere that emphasizes academic success. Such an atmosphere may encourage effort and reinforce affective ties to the school. Although some evidence suggests that the achievement level of the school does not affect rates of absenteeism or dropping out (Bryk and Thum 1989), we do not know whether it may affect other forms of engagement or how it may influence attachment. We view the educational climate of schools, which, given the well-documented race-ethnicity gap in achievement is clearly related to the racial-ethnic composition of schools, as an important feature of schools that needs to be studied.

Four Research Questions

In summary, past research has suggested that adolescents from racial-ethnic minority groups may be more detached from school, and there is considerable debate over whether they are also more disengaged from school. These patterns may arise from a complex web of individual- and school-level factors. The purpose of our study was to untangle this web by pursuing four questions:
1. Do white, African American, and Hispanic American adolescents differ in their levels of attachment to school and academic engagement?
2. Does the relation between race-ethnicity and the two educational outcomes vary across schools?
3. Do the characteristics of schools, especially the racial-ethnic composition of the student body and the teaching staff, influence students' attachment and academic engagement?
4. Do the characteristics of schools, especially the racial-ethnic composition of the student body and the teaching staff, account for any of the variation across schools in

the effect of race-ethnicity on the two educational outcomes?

To answer these four questions, we applied multilevel modeling techniques to a sample of adolescents in grades 7–12 from AddHealth.

METHODS

Sample

The data are from AddHealth, an ongoing nationally representative study of American adolescents in grades 7–12 that began in 1994. Sampling was conducted with a stratified design, in which schools were selected from a complete list of American high schools (Quality Education Database) on the basis of their region, urbanicity, school type (public versus private), racial composition, and size. Each of the selected high schools was matched to a school that fed into it (typically a middle school), with the probability of the feeder school being selected proportional to its contribution to the high school's student body. Over 70 percent of the selected schools agreed to participate, and replacement schools for those that refused to participate were from the same communities as the schools they replaced. This multistage design resulted in a final sample of 134 middle schools and high schools in 80 communities.

From these school populations, over 90,000 students completed the in-school questionnaire in the 1994–95 school year. Of these students, 20,475 completed 90-minute Wave 1 in-home interviews in 1995 (selected evenly across pairs of high schools and feeder schools). For additional information on the study, see Bearman, Jones, and Udry (1997).

Our study examined the Wave 1 in-home sample of adolescents, but also drew information from three supplemental AddHealth data sets: the Parent Data Set (for information from the parents of the Wave 1 adolescents), the School Administrator Data Set (for information from a school official, typically the principal, from each study school), and aggregated responses from students on the in-school questionnaire (for additional information about the schools).

We imposed three constraints on the study sample. First, because of the focus on three specific ethnic groups, only whites, African Americans, and Hispanic Americans were included. Other ethnic groups (e.g., Asian Americans and Native Americans) were few and concentrated in a limited number of schools. Second, because some school characteristics were created by averaging all the individual responses to questions on the in-school questionnaire within schools, we excluded all adolescents who came from schools in which the response rate on the in-school questionnaire was lower than 70 percent. Third, because of the need to weight cases to control for the sampling design of AddHealth, we included only those adolescents who were assigned a sampling weight (see Chantala and Tabor 1999 for more information on weights and design effects in AddHealth).[2]

After we applied these constraints and deleted missing data listwise, the final study sample contained 8,104 students in 64 "target" schools and 2,482 adolescents in 45 "feeder" schools. Although we use the terms *high school* and *middle school* for these two types of schools, we should note that some of these high schools also include the lower grades. All high schools contain grades 10–12, and nearly all (60) contain grade 9 as well. More important, 18 of these 64 schools include grade 8 and 17 include grade 7. Thus, the students in our "high schools" were in grades 7–12. Students in our "middle schools" were nearly all 7th and 8th graders, but 2 of the 45 schools included 9th graders as well.

Measures

Academic Outcomes   The composite for *school attachment* was based on the extent to which adolescents agreed that, in the past school year, they felt close to people at their schools, felt a part of their schools, and were happy to be at their schools. Responses, ranging from 1 (strongly agree) to 5 (strongly disagree), were reverse coded so that higher values indicate higher levels of attachment. Responses to these three items were averaged, as long as data for at least two of the items were not missing for a respondent (Cronbach's =.77). Univariate statistics for attachment and the other variables used in the analysis appear in Table 1. The average levels of attachment were high; just over half the sample scored 4 or above on this scale. The students in middle schools demonstrated higher levels of attachment than did the students in high schools ($p < .001$).

The composite for *engagement in school* was based on responses to three items: in the past school year, how many times the adolescent had skipped school, had trouble paying attention in school, and had trouble getting homework done. For the first item, the responses were collapsed into five categories (0 = 0, 1 = 1-2, 2 = 3-5, 3 = 6-9, and 4 =10 or more days). Responses ranged from 0 (never) to 4 (everyday) for the second and third items. The three items were reverse coded and averaged, as long as data on at least two were not missing, to create the composite (= .61). As measured here, engagement taps a minimal level of participation in school. It can be thought of as the absence of disengagement, when disengagement involves skipping school, not paying attention in class, and not completing homework. Two-thirds of the sample scored 3 or above on this scale. The middle school students were more engaged than were the high school students ($p < .001$).

These measures of school attachment and engagement are moderately related in the sample ($r = .30$). Attachment and engagement are also each related to achievement (mean grade point average across four academic subjects) in expected ways, with correlations of .20 and .38, respectively.

Individual-level Independent Variables Six individual-level variables were included in the multilevel analyses. Five were demographic characteristics: *race-ethnicity* (dummy variables for Hispanic Americans, African Americans, and whites, based on the adolescents' self-identification), *gender* (1 = female), *parent education* (the mother's and father's educational attainment, averaged), *intact family* (living with two biological parents = 1), and *age*. The sixth, *parental expectations for adolescents' future education*, was based on

Table 1. Univariate Statistics for Independent and Dependent Variables

Variables	Middle Schools		High Schools	
	Mean	SD	Mean	SD
Individual Level				
Attachment (range = 1-5)	3.84	.84	3.73	.90
Engagement (range = 0-4)	3.17	.71	2.95	.80
Hispanic American	.10	.30	.09	.29
African American	.18	.38	.15	.35
White	.72	.45	.76	.42
Female	.50	.50	.48	.50
Age	14.02	.80	16.63	1.40
Intact family	.53	.50	.56	.50
Parents' education	5.43	2.04	5.49	2.05
Parents' educational expectations	2.28	.67	2.20	.73
School Level				
% Own race/ethnicity students	62.59	24.12	69.64	24.56
% White teachers	84.06	22.56	87.32	21.77
Private school	.06	.23	.08	.26
School size	4.77	2.34	11.47	7.16
West	.14	.35	.09	.28
Midwest	.28	.45	.37	.48
Northeast	.11	.32	.17	.38
Average grade point average of the school	2.87	.27	2.80	.22
Average parents' education of the school	4.63	.65	4.64	.71

Note: Descriptive information based on 2,482 students in 45 middle schools and 8,104 students in 64 high schools.

the average of adolescents' assessments of how disappointed both their mothers and fathers would be if they did not graduate from college (on a scale of 1, low, to 5, high). For both parent education and parental expectations, we used the averages of the mother's and father's responses if neither was missing, but if only one was not missing, then that parent's response served as the final value.

School-level Variables Two school-level variables dealt explicitly with race-ethnicity. By identifying the race-ethnicity of each student and identifying his or her school, we located the *percentage of students of the respondent's ethnicity in the adolescent's school.* The breakdown for each school was created by calculating race-ethnicity by school frequencies from the 90,000 in-school questionnaires. We used this measure of composition instead of other measures (e.g., percent white or percent minority, ethnic heterogeneity) because

it captures the fit between students and their school environment. School administrators were asked to estimate the percentage of teachers who belonged to major ethnic groups. Ideally, we would have preferred to have created a variable for the percentage of teachers of the respondent's race-ethnicity, but we could not do so because the racial-ethnic distribution was not varied enough. Instead, we created a variable for the *percentage of white teachers* in each school. To approximate the fit between students and teachers as best we could, we included interaction terms between the percentage of white teachers and students' race-ethnicity.

Two school-level variables were based on the average values for all students in a school. The value for parental education (as described earlier) was calculated for all students in the 90,000 in-school questionnaires. By linking students to the study schools, we measured the *mean level of parental education,* and a similar procedure resulted in a

measure of *mean grade point average* (the average of self-reported grades in English, math, social studies, and science in the past year, where 1 = F/D and 4 = A) for students in each school.

School administrators provided a school roster for each school, from which we obtained the number of students enrolled in that school. We measured school size by the total enrollment at each school in hundreds of students. The administrator also indicated the *school sector* (1 = private, 0 = public) and the *region of the school* (1= West, 2 = Midwest, 3 = Northeast, and 4 = South).

Plan of Analyses

We assessed the influence of both individual-level and school-level factors on school attachment and academic engagement using hierarchical linear modeling (HLM), which is particularly suited for multilevel data such as these. Since this technique and its advantages have been described in detail elsewhere (e.g., Bryk and Raudenbush 1992; Kreft and De Leeuw 1998), we limit our discussion to a few basic points.

One of the key features of HLM is that it explicitly takes into consideration the fact that students are clustered within schools and are not statistically independent observations. Standard errors can be underestimated when this within-school clustering is not taken into account. An important aspect of the technique involves distinguishing the variation that occurs among students within a school from the variation that occurs among schools. Another key feature of HLM is that interactions between variables at different

levels can be easily assessed and interpreted. One can first assess whether the relation between an independent and dependent variable differs between schools (i.e., a random slope). If it does, one can further examine whether particular school-level variables explain why.

In the next section, we begin by estimating unconditional models for each educational outcome to determine the amount of variation that occurs among students within schools and that which occurs between schools. We then proceed to examine the influence of race-ethnicity and school racial-ethnic composition on students' attachment and academic engagement by addressing the four research questions outlined earlier.

RESULTS

Table 2 presents estimates of the variance components from the unconditional model for each educational outcome. Clearly, most of the variation in students' attachment and academic engagement occurs among students within schools. The variation in attachment and engagement between schools is relatively small, consistent with research on other educational outcomes (e.g., Cook et al. forthcoming). The intraclass correlation represents the amount of variance in the outcome that is attributable to between-school variation. For students in middle schools, 4 percent of the variation in attachment, but only 2 percent of the variation in engagement, is between schools. For students in high schools, 4 percent of the variation in

Table 2. Variance Components for Attachment and Engagement

	Attachment	Engagement
Middle Schools		
Within-school variance	.69	.50
Between-school variance	.03	.01
Intraclass correlation	.04	.02
High Schools		
Within-school variance	.78	.61
Between-school variance	.03	.03
Intraclass correlation	.04	.04

Note: Middle schools: 2,482 students in 45 schools; high schools: 8,104 students in 64 schools.

both outcomes is between schools. The explanatory capacity of school-level variables for these two educational outcomes is restricted to this portion of the variance.

We began our analysis by examining whether racial-ethnic differences are evident in school attachment and academic engagement and whether this effect varies across schools. To determine whether students of different racial-ethnic groups differ in their levels of attachment and engagement, we first estimated a within-school model with dummy variables for students' race-ethnicity as the only predictors. To determine whether the relation between race-ethnicity and each educational outcome varies significantly across schools, we compared the fit of two models. In the first model, the effects of race-ethnicity on the outcome represent fixed effects. In the second model, we permitted the race-ethnicity effects on the outcome to vary across schools (i.e., a random slope). The results of these model comparisons (Model 1 versus Model 2) appear in Table 3. For middle schools, there is no evidence of random effects of race-ethnicity on attachment and engagement. For high schools, in contrast, the fit of the model shows statistically signifi-

cant improvement when the effects of race-ethnicity are allowed to vary across schools. Thus, we conclude that the effects of race-ethnicity on attachment and engagement vary across high schools. The models shown in Tables 4-6 reflect these findings—only the high school model includes these random slopes. Models 3 and 4 in Table 3 are discussed later in this article.

In general, African Americans are least attached to school (see Table 4). In middle school, they are significantly less attached to school than are Hispanic Americans; in high school, they are significantly less attached to school than are whites. In both cases, the differences between Hispanic American and white students are not statistically significant. In contrast to their lower attachment, African Americans are *more* likely to be engaged at school than are other racial-ethnic groups. Both whites and Hispanics are less engaged than African Americans. Thus, in terms of basic engagement behaviors—going to class, paying attention, and doing homework—African Americans are doing better than the other two groups.

Racial-ethnic differences in educational outcomes can be due to a number of differ-

Table 3. Model Comparisons[a]

Model	Attachment	Engagement
Middle Schools		
Model 1	7358.34	6543.63
Model 2	7358.20	6537.52
Difference	0.14 NS[b]	6.11 NS[b]
High Schools		
Model 1	26310.71	24342.67
Model 2	26262.40	24319.15
Difference	48.31***	23.52***
Model 3	26267.24	24122.59
Model 4	26231.24	24090.16
Difference	36.00***	32.43***

Note: Middle schools: 2,482 students in 45 schools; high schools: 8,104 students in 64 schools. Model 1 includes fixed effects of race-ethnicity and a random intercept. Model 2 allows the effect of race-ethnicity to be random, along with the intercept. Model 3 includes fixed effects for all individual- and school-level variables, interactions between the race-ethnicity dummy variables and all school-level variables, and a random intercept. Model 4 includes the same variables as Model 3, but allows the effects of race-ethnicity to be random, along with the intercept.

[a] −2 Res. log likelihood reported.

[b] NS = not significant.

*** $p < .001$.

Table 4. Zero-Order Influence of Race-Ethnicity on Attachment and Engagement

	Dependent Variables	
Independent Variables	Attachment	Engagement
Middle Schools		
African American (reference = white)	-.05	.06*
	(.03)	(.02)
Hispanic American	.03 [a]	-.04 [b]
	(.03)	(.03)
High Schools		
African American (reference = white)	-.06*	.08***
	(.03)	(.02)
Hispanic American	-.05	-.05 [c]
	(.04)	(.03)

Note: Middle schools: 2,482 students in 45 schools; high schools: 8,104 students in 64 schools. Standard errors are in parentheses. High school models include random slopes for race-ethnicity.

* $p < .05$, ** $p < .01$, *** $p < .001$.

[a] African American-Hispanic American comparison is statistically significant at $p < .05$.

[b] African American-Hispanic American comparison is statistically significant at $p < .01$.

[c] African American-Hispanic American comparison is statistically significant at $p < .001$.

ences in background and other attributes among students from different groups. The next step of our analysis involved adding controls for other student characteristics and examining the influence of school-level factors on students' attachment to school and academic engagement. To build a final model, we began with a baseline model that included all variables measured at the individual-level and then considered only one school-level variable at a time. We then selected those school-level variables that have significant effects when considered in this manner for inclusion in the final model. This final model appears in Tables 5 and 6 for attachment and engagement, respectively.

For attachment, Hispanic Americans are more attached to school than are whites and African Americans, but only in middle school (see Table 5). At the high school level, there are no racial-ethnic differences with controls for other student characteristics. For engagement, African Americans maintain their advantage over the other two groups in both middle school and high school (see Table 6).

Beyond racial-ethnic differences, we note that a number of other student characteristics are associated with attachment and engagement. Consistent with prior studies, girls are more engaged at school than are boys, and younger students are both more attached and engaged than are their older counterparts. The gender differences in engagement and age differences in both outcomes are consistent across middle school and high school. In contrast, for *attachment,* the gender difference reverses, moving from middle school to high school. Whereas girls are more attached than boys to their schools in middle school, girls are less attached than boys to their schools in high school. Despite their general academic success, girls may struggle with the emotional side of school during the high school years, reflecting their greater emotional struggles during adolescence (Ge et al. 1995). Thus, they still show up, play by the rules, and study, but they may not feel as secure and comfortable in the process.

Students from intact homes also score higher on attachment and engagement, and parents' educational attainment fosters school attachment. Finally, parents' expectations about whether their children will attend college are related to school attachment and engagement, but only in high school. These expectations become more relevant, to both students and parents, as adolescents near the completion of high school. In general, students from advantaged homes (intact families, higher parental education, and higher parental expectations for the children's educational attainment) have better academic outcomes.

At the school level, the racial-ethnic composition of schools predicts attachment (see Table 5), but not engagement (see Table 6). As expected, students who attend schools with greater percentages of students of their own race-ethnicity are more attached to school. In middle school, student composition has the strongest effect of any variable in the model, followed closely by family structure and age (standardized coefficients are .09, .08, and -.07, respectively). In high school, the effect of student composition is not quite as strong, but its standardized coefficient (.04) is still larger than that for some other statistically significant effects, including gender (-.03), parents' education (.02), and school grade point average (.03). For high school students only, having a greater proportion of one's own racial-ethnic group in the school is associated with engagement

Table 5. Individual and School-Level Influences on Attachment

Independent Variables	Middle Schools		High Schools	
	Unstandardized	Standardized	Unstandardized	Standardized
Individual Level				
African American (reference = white)	-.01 (.03)	-.00	.02 (.03)	.01
Hispanic American	.10** (.04)`	.04	.02 (.04)	.01
Female	.09** (.03)	.05	-.06** (.02)	-.03
Age	-.07** (.02)	-.07	-.05*** (.01)	-.08
Intact family	.13*** (.04)	.08	.14*** (.02)	.08
Parents' education	.02** (.01)	.05	.01* (.01)	.02
Parents' educational expectations	.02 (.03)	.02	.09*** (.01)	.07
School Level				
% Own race-ethnicity students	.003** (.001)	.09	.002** (.001)	.04
% White teachers	—		—	
% White teachers* African American	—		—	
% White teachers* Hispanic American	—		—	
Private school	—		.20** (.07)	.06
School size	—		—	
West (reference = South)	—		—	
Midwest	—		—	
Northeast	—		—	
Average grade point average of school	—		.13 (.10)	.03
Average parents' education of school	—		—	

Note: Middle schools: 2,482 students in 45 schools; high schools: 8,104 students in 64 schools. The model for high schools includes random slopes for race-ethnicity. Standard errors appear in parentheses. Standardized coefficients were calculated by multiplying the unstandardizd coefficient by the ratio of the standard deviations of the independent and dependent variables at the individual level. A dash indicates that the variable was dropped from the final model.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6. Individual and School-Level Influences on Engagement

Independent Variables	Middle Schools		High Schools	
	Unstandardized	Standardized	Unstandardized	Standardized
Individual Level				
African American (reference = white)	.09*** (.02)	.05	.12*** (.02)	.05
Hispanic American	-.03 (.03)	-.01	.00 (.04)	.00
Female	.21*** (.03)	.15	.16*** (.02)	.10
Age	-.12*** (.02)	-.08	-.07*** (.01)	-.12
Intact family	.20*** (.03)	.14	.19*** (.02)	.12
Parents' education	.00 (.01)	.00	.01 (.00)	.03
Parents' educational expectations	.03 (.02)	.03	.07*** (.01)	.06
School Level				
% Own race-ethnicity students	—		.00 (.00)	.00
% White teachers	—		—	
% White teachers* African American	—		—	
% White teachers* Hispanic American	—		—	
Private school	—		—	
School size	—		-.01** (.00)	-.07
West (reference = South)	—		-.21*** (.06)	-.07
Midwest	—		-.12** (.04)	-.07
Northeast	—		-.17*** (.05)	-.08
Average grade point average of school	—		.25** (.08)	.07
Average parents' education of school	—		—	

Note: Middle schools: 2,482 students in 45 schools; high schools: 8,104 students in 64 schools. The model for high school includes random slopes for race-ethnicity. Standard errors appear in parentheses. Standardized coefficients were calculated by multiplying the unstandardizd coefficient by the ratio of the standard deviations of the independent and dependent variables at the individual level. A dash indicates that the variable was dropped from the final model.
* $p < .05$, ** $p < .01$, *** $p < .001$.

when it is the only school-level variable considered (thus, justifying its inclusion in our final model), but the effect is not significant in the full model. The percentage of white teachers in a school, a proxy for the ethnic composition of the teaching staff, makes no difference in terms of attachment or engagement.

Beyond racial-ethnic composition, a few other school-level variables are also related to

students' attachment and engagement, particularly at the high school level. Among middle schools, the only important school-level factor is the effect of students' racial-ethnic composition on attachment. This effect explains 25 percent of the school-level variation in attachment. Given the lower intraclass correlation for engagement in the middle schools, it is perhaps not surprising that we found no significant school-level influences. Engagement, in the way we examine it here, is more of a problem during the high school years (Roderick 1993), and variations in the structure and climate of schools may make more of a difference at that time.

At the high school level only, students in private schools display higher levels of attachment than do students in public schools. This pattern is consistent with prior research on related educational outcomes. Affective ties do not appear to be related to school size, but behavioral engagement is. Students in larger high schools are less academically engaged. As others have noted, this effect of school size is probably indirect, operating through internal structural features of larger schools (Fowler and Wahlberg 1991; Lee et al. 1993). The academic climate of high schools is also related to engagement. Students attending high schools with higher average grades are more engaged, though not more attached. Finally, students in the South are more academically engaged than are students in all other regions. The average parental education level of high schools makes no difference in these outcomes. These school-level variables explain 40.2 percent and 68.3 percent of the school-level variance in attachment and engagement, respectively.

To summarize the main findings up to this point, once other student characteristics are controlled, Hispanic American students are more attached to their schools than are whites and African Americans, but only in middle school. African American students have higher levels of engagement than do white and Hispanic students in both middle school and high school. The student racial-ethnic composition of schools is related to attachment, but has no effect on engagement behaviors once other school factors are controlled. As hypothesized, students who

attend schools with higher proportions of students of their own race-ethnicity are more attached to school. We also know that the relation between race-ethnicity and *both* outcomes varies across high schools, but have not to this point examined why. Does the racial-ethnic composition of the student body in schools explain this pattern?

To investigate whether school-level variables explain the varying effect of race-ethnicity on students' attachment and academic engagement in high school, we estimated an additional set of models in which we included interaction terms between the race-ethnicity dummy variables and each school-level variable. Although we hypothesized that the racial-ethnic composition of the student body is the most likely source of this pattern, we examined all the school-level factors. For each outcome, we compared a model in which the race-ethnicity effects were treated as fixed to one in which they were allowed to be random. Despite the presence of these additional interaction terms, the fit of the model showed statistically significant improvement when we included the random slopes (compare Models 3 and 4 in Table 3). Moreover, none of the interaction terms proved to be statistically significant. Thus, we are left without a compelling explanation for this pattern. None of the school-level variables we examined explains why the effect of race-ethnicity on attachment and engagement varies across high schools.

To examine further whether the racial-ethnic composition of the schools is the source of this varying effect across schools, we considered several alternative measures of racial-ethnic composition. Instead of measuring composition as the percentage of students in a school of a student's own ethnicity, we measured composition as the percentage of white students in a school, including the squared and cubed terms as well. We also examined the ethnic heterogeneity of schools, based on the number and proportions of various ethnic groups in the school.[3] Neither of these alternative measures was superior to the original measure or the source of the varying effect of ethnicity across schools, however. Because these measures are highly interrelated, only one could be included in our model, and so

we retained the original measure. Finally, we examined a measure of the racial climate at the school, based on the racial-ethnic composition of students' friendship groups. We aggregated friendship data to the school level to represent the degree of segregation among racial-ethnic groups in a given school.[4] Segregation has no influence on students' attachment and engagement and does not explain why the effect of race-ethnicity varies across schools. On the basis of this extensive examination, we conclude that the racial-ethnic composition of schools does not produce the variation in the effect of race-ethnicity on attachment and engagement.[5]

DISCUSSION

The results of this multilevel analysis support our contention that race and ethnicity, at both the individual and school levels, influence the educational experiences of American middle school and high school students. At the individual level, African Americans and whites are less attached to school in middle school than are Hispanic Americans. No such differences exist in high school. African American adolescents are more actively engaged in classroom and school activities than are other groups, both in middle school and high school.

These results on attachment are contrary to our expectations and diverge from what has been portrayed in much of the literature. The few past studies that addressed this issue reported that minority students are less attached to school. In our study, however, we found that one minority group (Hispanic Americans) is *more highly attached,* and another (African Americans) is *equally attached* compared to white adolescents. Because racial-ethnic differences in attachment vary across schools, prior studies that used a limited number of schools may have found differences that are not apparent nationwide. Variation in the measurement of attachment could also be the reason for this discrepancy. Our measure of attachment gauged the affective ties of students to their individual schools and the people within them. Other studies, not limited to those

addressing ethnic differences (e.g., Crosnoe 2001), have employed measures that dealt more explicitly with the educational processes within schools. Thus, minority students may feel more divorced from the academic processes of school but still feel connected socially. In addition, weaker attachment to school may occur more narrowly among specific subgroups of minority students (see Moody 1997). Additional research is needed to examine these issues.

The existence of a race-ethnicity gap in engagement has been vigorously debated, primarily because of the achievement differences among groups. Our findings, from a national sample of schools and including adolescents across the middle and high school years, clearly indicate that African American students are more engaged than are white and Hispanic American students, at least in terms of the engagement behaviors we measured. These findings are consistent with Ainsworth-Darnell and Downey's (1998) findings that African American students report trying harder in class than do white students. Like that study, we actually compared African American students to students from other racial-ethnic groups.

It is important to recognize that this measure captures a fairly minimal level of engagement. Although it clearly separates the disengaged from the engaged, it does not differentiate students at higher levels of engagement. Thus, African American students may be more likely to be minimally engaged, though they *may or may not* be the most engaged students in school. In other words, what we do know from these findings is that African American students are the least likely to be highly disengaged. Nevertheless, this finding is important because much of the social concern about African Americans in school has often centered on their presumed lack of effort.

Engagement may involve a greater continuum of behaviors. Finn (1989), for example, described participation as having multiple levels. At the first level, students meet minimal requirements to pay attention, be prepared, and respond to teachers' directions and questions. It is this level that most closely matches our measure of engagement. At a

second level of participation, students do more than what is required, initiate questions on their own, and are enthusiastic about learning. At a third level of participation, students are involved in extracurricular activities. We concur with Smerdon (1999), who advocated a multidimensional approach to studying engagement. Future work on race-ethnicity differences in engagement will benefit from examining a range of engagement behaviors in concert—from the minimal behaviors examined here to the greater psychological investment of engaged students described by Newman et al. (1992). Reflecting our earlier arguments, however, we stress that movement in this direction should take care not to confound engagement with students' feelings of belonging or their general valuations about education.

We found that school contexts matter for students' attachment and engagement, though not as much as other sources of difference among students in the same schools. Our primary focus at the school level was on the racial-ethnic composition of schools, and we found that students are more attached to school when they attend schools with proportionately more students of their own race-ethnicity. We discuss the policy implications of this finding shortly.

Engagement is not affected by student composition in this way. We anticipated that having more of one's group in a school would expose students to models of highly engaged minority peers and that this exposure might support engagement. This appears not to be the case, though it may happen for other academically relevant behaviors. Other characteristics of schools, including sector (private or public), total enrollment, and the average achievement level of students, are also related to these educational outcomes.

These school effects are small. Only a limited portion of the total variance in each outcome could be attributed to school factors of any kind. This pattern is consistent with other research on school and neighborhood influences on adolescents (Cook et al. forthcoming; Phillips 1997). Although much of the variation in attachment and engagement occurs at the individual level, the individual characteristics that predict attachment and engagement indeed represent larger social structural forces (e.g., gender, family structure, and SES), developmental stages (age and school level), and family processes (e.g., parents' expectations).

Despite their limited impact, school effects are a key piece in the puzzle and need to be more consistently integrated into educational research, even when they are not the central focus. Moreover, we believe that small contextual effects like these can be important for several reasons. First, the comparison of between-school and within-school variation contrasts the role of a single context (a school) with the role of multiple individual differences (Cook et al. forthcoming). Second, the influence of school characteristics may be cumulative over long periods, leading to greater total effects. Advantage and disadvantage tend to cumulate over the life course. Finally, adolescents operate in multiple interrelated environments that may each contribute to outcomes like those studied here. For example, Cook et al. (forthcoming) assessed the joint role of nuclear families, friendship groups, schools, and neighborhoods on the development of healthy adolescents (7th and 8th graders) in Prince George's County, Maryland. They found that the quality of all four contexts had independent and additive influences on changes in adolescents' "success," defined by a composite of school performance, social behavior, and mental health indicators. Although the effects of any one context were not large over the 19 months of the study, the *total* contextual effect was substantial.

Likewise, multiple contexts may foster or hinder students' attachment and engagement. Although beyond the scope of the current study, friendship groups may be a particularly important context to examine in further research on attachment and engagement. Both the qualities of friendships—their closeness and support—and characteristics of friends—their values and behaviors—are important generally in adolescent outcomes (Crosnoe 2000). Friends can encourage or discourage doing homework, goofing off in class, and high achievement, shaping one's engagement behaviors. Friendships also tie individual students to the larger social net-

works of a school. Friendships with students who are more centrally located in the social structure of the school may foster a stronger sense of belonging.

Despite their somewhat limited influence, schools remain of considerable interest because they represent a prime entry point for intervention. Our finding on the effects of school racial-ethnic composition deserves additional comment in light of this policy interest. The policy implications of this study need to be considered within the context of the larger body of research on the racial-ethnic composition of schools. Our findings demonstrate that students feel more attached to school when they attend schools with greater proportions of students of their own race-ethnicity. But to act on these findings would deny other personal and social benefits of integration, such as tolerance and equality of opportunity. The challenge this study presents for educators is how attachment can be better promoted *within racially and ethnically diverse schools*. How can multigroup environments be made to work for all students?

Additional research is required to understand why racial-ethnic differences in students' attachment and engagement vary across high schools. Although we identified several compositional characteristics and features of high schools that influence these two educational outcomes, we did not identify the features of school environments that make racial-ethnic differences in attachment and engagement larger at some schools and smaller at others. We can rule out racial-ethnic compositional differences in student bodies as the source of this pattern. Future investigations may examine more closely the internal workings of schools as an alternative source. Such examinations will be made more possible with the third wave of data collection for AddHealth, currently under way. Among other things, students' transcripts will be collected, and they will provide additional information on course taking and thus racial-ethnic composition as it relates to the internal structures of schools.

Further research is needed on the relationship between students' attachment and engagement, as well as on their connections to academic achievement. Attention to all

three will provide a more complete understanding of educational experiences. The moderate correlation between attachment and engagement, as well as some differences in their relationships to the other variables examined here, convince us that they do represent two different dimensions and should not be treated as a single construct. Attachment and engagement are likely to be mutually reinforcing over time, and future studies, designed to capture these separate dimensions, may be able to model this dynamic process. Determining how attachment and engagement are related to achievement is also left to future research, since we considered achievement as partially endogenous to the outcomes we examined. Repeated measurements across much of the educational career are likely to be required to capture the complex interrelationship among attachment, engagement, and achievement.

NOTES

1. We found one case in which students in these minority groups were reported to be more engaged than white students (Lamborn et al. 1992), although there was no information as to whether this was a zero-order or adjusted estimate and how engagement was measured with respect to this conclusion.

2. Aside from the sample being limited to three racial-ethnic groups, the students in our final sample differ in some ways from those students who were excluded. Comparing our sample to African American, Hispanic American, and white students who were excluded by our selection criteria, we found that whites were overrepresented in our sample, as were students from intact families and students with more educated parents. Students who were included in our sample were slightly more attached to their schools ($p < .05$), but did not differ from excluded students in their engagement behaviors or grades. They also did not differ in terms of gender, age, and family income.

3. Ethnic heterogeneity was measured using the Herfindahl index (see Ellison, Burr, and McCall 1997) as $1 - \acute{\imath}p_i^2$, where p_i is the proportion of all students in ethnic group *i*.

Five ethnic groups were distinguished, including white, African American, Hispanic, Asian, and other.

4. Further information on the friendship network variables is available from the authors. Because the degree of segregation of friendships in a school had no influence on either outcome and because there were considerable missing data on this measure, we did not include it in our final model.

5. At the suggestion of a reviewer, we also examined whether including a measure of friendship group racial-ethnic composition at the individual level would account for the variation in the effects of race-ethnicity on attachment and engagement across high schools. This analysis was based on a subsample of students for whom information on the race-ethnicity of their friends was available (N = 2,718). The composition variable, measured at the individual-level, represented the proportion of the student's friends who were of the same race-ethnicity. The racial-ethnic composition of friendship groups had no effect on either outcome and did not alter the amount of variation in the race-ethnicity slope for either outcome.

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