Adolescent Educational Outcomes: Do Peer Networks Matter?

The United States continues to become more ethnically and racially diverse (U.S. Census Bureau 2000). This is especially so among the school-age population (Bean and Stevens 2003; Hirschman 2001; Orfield, Eaton, and Jones 1997). Between 1991 and 2001 the white share of public school enrollment fell from 67.4% to 60.3%, while the percentages of African American, Latino, Asian, and Native American youth all increased (U.S. Department of Education 2003). Paradoxically, there was a simultaneous increase in school racial segregation for the first time since the 1955 *Brown v. Topeka* decision. Harvard's desegregation project found that the percentage of black students attending high-percent minority schools fell from 76.6% in 1968-69 to 62.9% in 1980-81, but by 1996-7 had increased to 68.8% (Orfield and Yun 1999). Furthermore, by 2003 the enrollment of black students in predominantly white schools was lower than in any year since 1968 (Frankenberg, Lee, and Orfield 2003). In fact, today many inner city schools are more racially segregated than they were in 1955 (Orfield, Eaton, and Jones 1997). Still, the most segregated minority group today is not blacks, but Latinos, and their segregation levels have steadily increased over the past thirty years (Orfield and Yun 1999).

Despite the fact that many schools are racially and/or ethnically segregated, their student bodies remain extremely diverse (Clotfelter 2001). According to Bankston and Caldas (1998: 534), although "segregated schools are not and have never been the products of self-segregation by minority group members" the vast majority of teens is homophilic and prefers in-group associations (Joyner and Kao 2000; Kubitschek and Hallinan 1998; Moody 2001). Even when schools have diverse populations, students may not be integrated to the extent that members of distinct ethnic groups regularly interact with one another (Cohen 1975; Epstein 1985; Maran 2000; Tatum 1999). Thus, even relatively diverse student populations do not ensure high levels

of interracial contact among students.

Numerous studies have examined the relationship between school social composition and educational outcomes. However, no prior research has considered the possible effects of school-based *friendships* and *networks* on both academic achievement and attainment. Thus the question of whether school-based ethnic social capital can explain adolescent educational outcomes remains unanswered. This research will analyze the importance of various school-level factors on student academic achievement while controlling for other school-, family-, and individual-level factors. The school-level predictors to be examined include peer network segregation, school socioeconomic status, and school racial/ethnic composition. Our research foci are: (1) Do youth in schools with higher percentages of minority enrollment have worse academic achievement than those in schools with lower percentages of minority enrollment?; (2) Do youth in high socioeconomic status (SES) schools have better academic achievement than those in low SES schools?; and, (3) Do youth in schools with more racially or ethnically segregated peer networks have worse academic achievement than those in schools where peer networks are less segregated?

This study is both conceptually and empirically significant. First, it updates and expands the implications of important earlier research by incorporating more recent theoretical developments, empirical findings, and statistical techniques (Bryk and Raudenbush 1992; Raudebusch and Willms 1995). By so doing, we capture the essence of the school context by viewing adolescent networks and school composition as intertwined rather than isolated from each other. Second, we examine school-level effects differentially by race and ethnicity. As this is done we explore the tenets of oppositional culture theory, which posits that the orientation of friendship ties towards co-ethnic and co-racial peers hurts the achievement of minorities (Ogbu

1981). Third, this study draws on nationally representative data which are analyzed using multilevel modeling techniques. Fourth, school-level characteristics are examined while controlling for measures of family background and family social capital. Fifth, this study examines academic performance both cross-sectionally and longitudinally. Sixth and most importantly, we examine both race and class (two key "family background" components) as individual- and school-level predictors of academic achievement.

This study proceeds by first reviewing relevant literature on school segregation and peer networks. Next is a discussion of the data and methods used as we also describe the individual- and school-level independent measures to be analyzed and the hypotheses examined. This is followed by our results and conclusions.

RELEVANT RESEARCH ON SCHOOL SEGREGATION

Although most scholars agree that education is an important mechanism for social mobility, some scholars also believe that schools reproduce social inequality (Bankston and Caldas 2002; Carnevale 1999; Kahlenberg 1996; Roscigno 1998). The influences of race and social class extend well beyond the family realm, as they shape school attendance patterns and contribute to the creation of highly segregated school contexts, all of which affect academic achievement. Many of the mechanisms regarding how segregation affects achievement remain unknown. One intuitive explanation often advanced is that because school racial composition determines ones' ability to make friends with students from other racial and ethnic groups, an integrated school would provide the best possibility for frequent interracial contact and interracial information transfer. Thus the importance of interracial peer contact in schools has been of particular interest to social scientists. It has also served as one rationale for pursuing school desegregation.

In the 20th century the political issues surrounding racial/ethnic integration, generally, and school desegregation in particular, aroused intense debate as numerous social scientists attempted to document how school (de)segregation affects the academic achievement of both minority and majority students. Thus far the evidence on the effects of desegregation has been mixed. Some studies have demonstrated that concentrations of African-American students may be detrimental to student outcomes, regardless of family- or individual-level attributes (Bankston and Caldas 1996; Longshore and Prager 1985; Mahard and Crain 1983). Few studies observed short-term positive effects of desegregation on math and verbal scores of black students (e.g., Hoxby 2000; Schofield 1993). Other studies have found little or no evidence linking racial segregation to academic achievement (Ascher 1992; Crain and Mahard 1978; Jencks 1972; Leake and Leake 1992; Rivkin 2000). Efforts to synthesize research findings on the effects of desegregation have led some to conclude that the evidence is so mixed or contradictory that reliable conclusions are impossible (e.g., Bankston and Caldas 2002). One explanation for the apparent ambiguity of much of this research is that the effects of desegregation vary enormously from community to community and from school to school.

However, others suggest that the best indicator of school quality is not level of integration, but rather socioeconomic composition (e.g., Kahlenberg 1996, 2001). Much evidence shows that high-poverty schools reduce the educational performance of children, even when controlling for children's own class and race (e.g., Bankston and Caldas 1996; Entwistle and Alexander 1992). Indeed, when addressing the question of *why* it is disadvantageous to attend a school segregated by race or class, it becomes clear that the primary issue is one of class. Student attitudes and behaviors toward cutting classes, doing homework, dropping out, academic achievement, as well as parental attitudes toward school involvement, are all determined more by

class than race (Kahlenberg 1996). Not only is socioeconomic integration important as a means of enhancing academic achievement, but research reveals that it may be more important than racial integration (e.g., Orfield 1993). Researchers have found that school desegregation results in significant academic benefits only when socioeconomic, as well as racial, integration occurs (see Kahlenberg 1996 for a review of this literature). Indeed, for many years sociologists have agreed that the reason racial desegregation improves the academic achievement of minority students had nothing to do with the whiteness of the classmates, but rather with their economic status (e.g., Caldas and Bankston 1997). However, as Ralph and Fennessy (1983) note, much of the desegregation literature takes the form of reviews of reviews, with only a small number of highly influential empirical studies.

The most influential study to date, the *Coleman Report*, found that the "beneficial effect of a student body with a high proportion of white students comes not from racial composition *per se* but from the better educational background and higher educational aspirations that are, on the average, found among whites" (Coleman et al. 1966:307). Using data from over 600,000 students and teachers across the country, the report found that educational outcomes were primarily influenced by individual factors, such as a student's adaptation to school and the student's family background. Although the *Report* noted that individual factors supersede school-level factors, it also confirmed that low-income students experience greater achievement gains when they attend middle-class schools than when they attend high-poverty schools. The *Report* further found that the social composition of a school's student body is more highly related to achievement, independent of students' own social background, than any other school factor. Accordingly, both poor blacks and whites should benefit from attending a middle-class black school, whereas poor blacks would not enhance their academic achievement by attending

schools largely populated by poor whites. There are a number of criticisms that may be raised regarding both the Equality of Educational Opportunity (EEO) data used in the *Report,* as well as the methodological approach undertaken (see Jencks 1972 and Madaus et al. 1970). For instance, most of the school-level analyses were reduced to analyses of correlation-covariance matrices where the order of inserting variables determined the magnitude of correlation coefficients. Indeed, it was the case in Coleman's study that family-background variables were inserted before the school-level variables, a consideration which may have resulted in the underestimation of school content effect. Another important criticism of the *Coleman Report* is that, although it had access to student scores on standardized tests and grades, it used verbal ability as the primary dependent measure (Madaus et al. 1979). Additionally, the EEO verbal ability test is primarily focused on vocabulary which is known to reflect a strong ethnocultural bias. Perhaps it was the media's oversimplification of the *Report*'s findings that lead to the controversy about it and the belief among some that schools do not make a difference. Indeed, the methodological limitations discussed above may have lead to an underestimation of the school effect.

Numerous studies conducted after the *Coleman Report* concurred that the social class of a student's classmates matters more than their race. As such, the collective evidence accumulated by desegregation research made Orfield (1978:78) conclude: "Educational research suggests the basic damage inflicted by segregated education comes not from racial isolation but from the concentration of children from poor families." In 1972, using the same EEO data, Jencks repeated the Coleman analyses and found that poor sixth-graders, regardless of race, attending a high-poverty school were academically years behind their poor peers who attended a middle-class school. Jencks (1972), like Coleman, did not find significant racial differences in this regard. Jencks' study, however, is subject to the same criticism as the *Coleman Report*, as he also

used a number of standardized tests as measures of achievement. Later studies would revisit these research questions with more complex statistical techniques.[1] Among these studies, those that employed multilievel modeling are of special attention as they tend to produce more accurate estimates of the school effect (Raudenbush and Bryk 2002; Raudenbush and Willms 1995). Raudenbush and Bryk (1992) pioneered the use of Hierarchical Linear Models (HLM) for the purpose of producing more accurate statistical inferences from complex multilevel data. Using HLM and a sample of 7,185 students from 160 schools, they estimated that between-school variance accounted for 18 percent of the total variance in student math tests. Moreover, almost 70% of total between-school variance was explained by a single factor, the mean school SES. We caution against emphasizing the significance of this finding as Raudenbush and Bryk (1992) did not control for the schools' racial/ethnic composition, a factor which is typically found to be one of the most significant school-level predictors of educational achievement (Bankston and Caldas 2002). Raudenbush and Bryk (1992) also controlled for school type (i.e., private/public), a factor some times found to be significant. This may partially explain their high estimate of the variance explained by average SES of school. The fact that Raudenbush and Bryk (1992) did not include extensive individual-level controls may also account for their high estimate of between-school variation in math test scores (i.e., approximately 20% as compared to 10% in the Coleman and Jencks studies). Building on Raudenbush and Bryk's (1992) study, we will use the same software (i.e., HLM) but a different analytical strategy that satisfies the call for a more elaborate methodological approach to monitor the school effect.

[1] Chubb and Moe (1990), using longitudinal data, found the average SES of a school's student body to be strongly associated with gains in academic achievement among high school students. Sui-Chu and Williams (1996) examined factors influencing the math and reading scores of eighth-graders and concluded that the effect of a school's SES was as strong as that of the family SES. Using a nationally representative sample of schools Puma et al. (1997:73) observed that "the poverty level of the school is negatively related to standardized achievement scores."

RELEVANT RESEARCH ON PEER NETWORKS

School segregation likely impacts student outcomes because of the social isolation that effectively restricts minority students from contact with mainstream students. According to Hallinan (1982), the racial/ethnic socioeconomic composition of a student body determines the probability of interracial friendship formation by influencing the composition of friendship pools from which students draw. Most researchers consider interracial friendships to be beneficial for minority students (Coleman et al. 1966; Chubb and Moe 1990; Hawley and Smylie 1988; Roscigno 1998). The *Coleman Report* explained the benefits of school integration as the transmission of values. More specifically, socially acceptable patterns of behavior were diffused from the more privileged racial group to the less privileged one *through* interracial contact (Coleman et al. 1966; Gerard 1988). Other scholars stressed the importance of information transfer which is facilitated in integrated environments (e.g., Chubb and Moe 1990). Still others (e.g., Hawley and Smylie 1988) argue that interracial friendships provide minorities with access to resources, means of self-presentation, and patterns of communication acceptable to the majority. Chubb and Moe (1990:109) consider peer friendships at school to be a critical link between families and schools because "through their peers, students are influenced by the families of other students in a school." The acquaintances and communications between students foster social capital because they make possible network connections among sets of individuals (Hallinan and Sørensen 1985; Harris et al. 2002; Kubitschek and Hallinan 1998; Morgan and Sørensen 1999). Implicit in the concept of "social capital" as it applies to adolescents is the impact of group membership (Becker 1962; Hofferth, Boisjoly, and Duncan 1999). Because adolescents spend many hours together, the peer group has generally been identified as one of the most important influences on individual achievement.

Peer group theory predicts that the prospects for adolescent school success will vary depending on the peer group with whom adolescents most often come into contact (Coleman et al. 1966; Hallinan and Sørensen 1985). The peer group is the context in which adolescents are exposed to others, including role models. It involves contemporaneous behavioral influences and is always reciprocal (Coleman 1988; Coleman et al. 1966; Schneider and Coleman 1993). Peer group influences are usually understood to produce some sort of imitative behavior facilitated by interdependences in information transmission, so that the behavior of others alters the information on the effects of such behaviors available to a given individual (Berndt 1979; Savin-Williams and Berndt 1990). Numerous studies reveal that a child's peer group influences social and academic development and that these influences begin at the start of formal education (Dishion et al. 1995; Galambos et al. 2003). Some argue that adolescent subcultures often challenge adult authority and that students prone to peer pressures tend to fail academically (Berndt and Keefe 1995; Wentzel and Caldwell 1997). The assumption that adolescents begin to reject the values of their parents in order to follow their peers has led to an abundance of research focused on peer influence regarding antisocial behaviors such as smoking, drug use and sex (e.g., Bahr, Marcos, and Maughan 1995; Diclemente 1991). Although a number of studies (e.g., Berndt and Keefe 1995; Epstein 1983; Steinberg, Dornbusch, and Brown 1992) have examined peer influence on motivation towards academic achievement, researchers have continued to examine only the negative impact of peer influence, while placing little emphasis, if any, on the positive aspects of peer socialization. For example, considerable research stemming from the theory of oppositional culture (Ogbu 1978, 1981) has examined cultural patterns that penalize academic achievement. The theory of oppositional culture describes a cultural pattern within African-American and Latino communities whereby peers disparage academic achievement

because it is perceived as "selling out" or "acting white" (Fordham and Ogbu 1986; Ogbu 1991). Black peers may in some situations view academic success as a threat to group solidarity and negatively sanction students who perform well (Fordham and Ogbu 1986). Involuntary minorities (Ogbu 1978), such as blacks and Latinos, thus tend to develop a collective oppositional culture, a frame of reference that actively rejects mainstream behaviors and also undermines academic achievement. In other words, children in this culture are often ostracized for conforming to the educational system. As a result, Steinberg et al. (1992) argue that minority students receive less support for achievement from their peers of the same ethnic background and consequently do not fare as well in school as non-Hispanic white students.

Just as links have been established between negative peer influence and academic outcomes (Berndt and Keefe 1995; Berndt, Laychak, and Park 1990), similar linkages may be established between positive peer influence and academic outcomes (e.g., Epstein 1983). Still other research results directly contradict oppositional culture theory. For example, Carter (2003) reported that while black and Latino students rejected certain styles of speech, dress, and music as "acting white," they nonetheless valued behaviors conducive to academic success, such as studying hard, getting good grades, and making the honor roll.

In thinking about ways in which peers can impact the academic achievement of adolescents it is also important to investigate the impact of positively oriented peer influences as they relate to academic achievement. One way to think about this issue is to examine the effects of ethnic social capital on adolescents' academic outcomes. The notion of "ethnic social capital" was developed by Borjas (1992, 1995) and has since been primarily applied to studies of immigration and assimilation (e.g., Portes 1998; Portes and Rumbaut 2001). Borjas (1995) locates ethnic social capital within the ethnic group and its networks. He hypothesizes that

minority children can enjoy increased chances of economic success when they develop in social environments with larger amounts of ethnic capital. Ethnic groups and networks provide intergenerational transmissions of social and human capital, norms regarding educational attainment, educational and job information, and employment opportunities. Those ethnic groups that maintain strong ethnic solidarity and resist acculturation may provide better opportunities for their younger generation through the creation of ethnic social capital. Moreover, as Portes and Rumbaut (2001) indicate, minority groups may have more opportunities to form and maintain informal social networks and relationships among themselves. Thus ethnic social capital may be exceptionally important for minority youth, particularly within the school context. However, prior to the present study this possibility has yet to be systematically examined because co-racial and co-ethnic peer influences among minority adolescents have traditionally been viewed as a liability, not an asset.

HYPOTHESES

Several of the hypotheses examined in this study have already been tested many times before using different data sets and techniques. However, what is most unique about this study is that these research questions are now all examined together with still others that have never before been examined. The primary hypotheses examined in this study may be stated as follows:

I. We hypothesize that school racial and ethnic composition will affect adolescent academic achievement. More specifically, we expect that attendance at a school with a high minority enrollment will be associated with lower academic achievement.

II. We hypothesize a direct relationship between the average SES of a school and the academic achievement of its students. More specifically, attendance at a low SES school is expected to be associated with low academic achievement and vice versa.

III. We hypothesize that differences in academic performance are influenced by peer network formation patterns, specifically with respect to race and ethnicity. Based on Borjas' (1992, 1995) elaboration of the notion of ethnic social capital, and contrary to oppositional culture theory (Ogbu 1978, 1981; Fordham and Ogbu 1986) which posits that co-racial and co-ethnic social ties will negatively affect minority academic achievement, we hypothesize that co-racial and co-ethnic ties will positively affect the academic achievement of minority adolescents. Thus we expect to see significant interactions between race/ethnicity and one's orientation towards ethnic social capital, as measured by the racial segregation index. In other words, minority youth preferences for inter-group rather than intra-group ties may positively affect their academic achievement. Because minority youth are known to be disadvantaged in other forms of social (i.e., family) and financial capital (i.e., social class), it is likely that an orientation towards ethnic social capital will be more beneficial for minority youth than for majority adolescents. As such, minority students may rely on peer-based social capital (Lin 1990; Zhou and Bankston 1998) in order to compensate for the lack of family-based social capital.

IV. Following Coleman (1988), who suggested social capital manifests itself not only in the structure of social groups and networks but also in the quality of relationships and the amount of support they provide, we hypothesize that the amount of social capital present in networks is directly related to academic success. Since we proxy this amount as network achievement, we expect to find a positive association between network achievement and an individual student's achievement and attainment.

V. A number of studies mentioned family based social capital as one of the most important factors influencing adolescent educational success (Dornbusch et al. 1987; Israel Beaulieu and Hartless 2001; Stevenson and Baker 1987). More specifically, close bonds between

adolescents and their families and the parenting behaviors associated with these bonds are viewed as a potential resource or form of family social capital (Laosa 1982; Schneider and Coleman 1993; Smith et al. 1992; Stanton-Salazar 1997). We therefore hypothesize that higher parental educational expectations, as well as types of family capital, will have a positive effect on students' academic achievement. We also believe that controlling for family social capital will reduce racial differences in academic achievement. This is expected as earlier research has shown that factors related to family social capital might work differently for adolescents from different racial and ethnic backgrounds (e.g., Muller 1995; Steinberg, Dornbusch, and Bradford 1992).

DATA AND METHODS

The data used to investigate the aforementioned hypotheses is the National Longitudinal Study of Adolescent Health (commonly known as Add Health). This nationally representative, school-based dataset was collected in three waves, in 1994-95, 1996 and 2001-2002, respectively. During Wave 1 all students present in the 132 selected schools the day the self-administered questionnaire was conducted were surveyed (N=90,118). These data were supplemented with data supplied by an official at each of the surveyed schools. A subset of students was randomly selected from the 132 schools (N=20,745) for in-home interviews, as was a parent or parent-figure. With the exception of educational achievement, which comes from Wave 3, we rely on the Wave 1 data as they provide the most complete information on all variables of interest.

Those cases with missing values on educational attainment in Wave 3 were excluded. Applying this selection criterion reduced our final sample size to 15,183 students from 132

schools. As evidenced by supplementary univariate analyses (not shown for the sake of space), this reduction did not affect the distribution of sample

[Table 1 about here]

The Add Health data are distinguished by their hierarchical structure. As such, student achievement may be interpreted as a function of individual- (e.g., SES, sex, and age) and school-level factors (e.g., school racial and ethnic composition). Hierarchical Linear Models (HLM) is a statistical package that incorporates such factors in a more efficiently than ordinary least squares regression since HLM takes into account the error structures present at each level (Raudenbush and Bryk 2002). Furthermore, HLM allows for the analysis of relationships on a number of levels (see Bryk and Raudenbush (1992, 2002) for more information on HLM).

DEPENDENT VARIABLES

This study's dependent variables are educational achievement and attainment. Distinct analyses will focus each of these dependent variables. Achievement was computed based on the grades adolescents reported they earned in four subjects (math, science, English, and social studies) the prior year. These four responses, ranging from 1 (D or F) to 4 (A), were averaged across subjects and converted to a standard 4-point GPA for each year. Although slightly inflated, self-reported grades are highly correlated with the grades reported on official transcripts (Dornbusch et al. 1990). Table 1 shows that the average GPA in Wave 1 was about 2.8.

The measure educational attainment is available in Wave 3 of the Add Health data. At that time respondents, then young adults between the ages of 18 and 26, were asked about the highest grade of regular school they had completed. Their answers were used to create a 17 category variable ranging from "6th grade" (the lowest score) to "5 or more years of graduate school" (the highest score). In contrast with achievement, which only monitors current grades in

school, educational attainment provides information about a range of important life transitions that this cohort may have passed through, such as high school or college graduation.

INDEPENDENT VARIABLES

INDIVIDUAL-LEVEL MEASURES

Peer Social Capital. In this study, we employ two measures of peer social capital. One, discussed in the section School-Level Variables, captures the structural component of social capital. The other measure is average GPA of student's peer network (henceforth peer network GPA). This measure relates to the actual amount of peer social capital and, hypothetically, peer support available to individual student. Pre-constructed by the Add Health, this variable does not account for unequal network sizes. In other words, in those cases where networks are relatively small, network GPA is likely to approximate an individual student's GPA, thereby creating a source of collinearity with the individual student's achievement. To eliminate this bias we transformed network GPA, according to the following formula:

$$New\ Network\ GPA = \frac{UNGPA \times NS - Individal\ Student's\ GPA}{NS - 1},$$

where UNGPA – untransformed network GPA; NS – network size;

Other individual-level variables are examined in an attempt to control for personal and family factors that might impact academic achievement. These include gender, age, race/ethnicity and frequency of involvement in extracurricular activities. Gender is a dummy variable with male serving as the reference category. Age is measured in complete years at the time of interview. Race and ethnicity are determined based on student responses. From these response we created a series of dichotomous race/ethnicity variables for the categories African

American, Asian, Latino, and non-Hispanic white.[2] The latter serves as the reference category in these analyses. We monitor the variable involvement in extracurricular activities because high-achieving students typically spend more time engaged in learning activities both in and outside of school than do lower-achieving students (Blum and Reinhart 1997). In the Add Health extracurricular learning activities may include reading, writing, arts and crafts and other activities. Information on these activities comes from the question: "During the past week how many times did you do hobbies, such as collecting baseball cards, playing a musical instrument, reading, or doing arts and crafts?" Response categories range from 0 "not at all" to 3 "5 or more times."

Table 1 reveals that the sample's sex ratio is balanced with approximately equal proportions of male and female students. The average age of Wave 1 respondents in the summer of 1995 was 15 years. Approximately 65% were non-Hispanic white, 16% African American, 14% Hispanic, and 5% Asian. The modal score for extracurricular activities was 1 meaning that this group participated in 1-2 extracurricular activities during the past week.

Prior research shows that adolescent educational outcomes were associated with immigrant generational status (e.g., Kao and Tienda 1995, Orfield and Yun 1999). This is not surprising given that theories of immigrant adaptation have long predicted differential outcomes across immigrant generations (see Hirschman 2001 for more information about theories of immigrant assimilation). "Straight-line" assimilation posits continuous improvement with each successive generation while segmented assimilation theory (Portes and Zhou 1993) emphasizes contexts of reception. Because all assimilation theories underscore the significance of

[2] Asian and Latino adolescents were not divided further into ethnic origin groups (i.e., Chinese, Cubans, etc.) because exploratory analyses indicated that these groups are too small to make statistically significant inferences about their educational achievement.

generational status, we created three dummy variables to monitor respondents' generational status. Foreign-born adolescents are coded as immigrant generation one. Those U.S.-born children with at least one foreign-born parent are distinguished as generation two and generation three is comprised of those born in the U.S. with two U.S.-born parents.

Family Structure and Size. Family structure is believed to affect well-being by influencing family functioning (McLanahan and Sandefur 1994; Thomson, Hanson, and McLanahan. 1994). For this reason a series of dummy variables were constructed based on the household roster. We use these to contrast youth who live with biological or adoptive parents (reference) with those residing in either a single parent or non-parent situation. Similarly, research on household composition suggests a link between household size and adolescent well-being, as adolescents in smaller households exhibit better educational achievement (e.g., Bridge et al. 1979, Nelson et al. 2001). Therefore a dummy variable that controls for household size is also incorporated. The reference group consists of those households that contain no more than four members.

Socioeconomic Status (SES). Household income and parents' education are included in an attempt to control for family SES, a factor often linked to adolescent academic achievement (e.g., Bridge et al. 1979; Cogner et al. 1997; Lareau, 1989; McLoyd 1998). The income measure was obtained from the parental response to the question: "About how much total income, before taxes did your family receive in 1994? Include your own income, the income of everyone else in your household, and income from welfare benefits, dividends, and all other sources." Responses are coded in units of 1000 and range from 0 to 999. Those cases with negative income were recoded as zeros because reports of negative household income, as opposed to individual

income, may indicate debt and, thus, differ from the income measure in nature.[3] Other times these distinctions are often considered the result of measurement peculiarities rather than substantive difference (McLoyd 1998).

The parental education measures came from items asking: "How far did she [mother] go in school?" or "How far did he [father] go in school?" This is a measure of the highest level of education completed. Response categories range from "eighth grade or less" (coded 1) to "graduate training beyond a four-year college or university" (coded 9). Parents' education is recoded to account for family structure and capture the highest level of education achieved. All family measures, including family capital measures, were constructed as aggregate averages of responses for both parents, if available, and as simple measures if responses for only one parent were available.

Family Social Capital Measures. There is much evidence that family social capital is associated with the educational achievement of adolescents (e.g., Tienda and Angel 1982; Hetherington 1998; Israel, Beaulieu and Hartless 2001; Morgan and Sørensen 1999; Patterson, Reid, and Dishion 1992). Components of family social capital, such as parents' expectations for their children's further education, or parental supervision and involvement have been documented to influence the educational outcomes of adolescents (e.g., Conger et al. 1994; Israel et al. 2001; Laosa 1992; Lee 1993; McLoyd 1998; McNeal 2001; Patterson et al. 1992). The index monitoring parents' educational expectations was created from two items asked separately about mother's and father's expectations. Respondents were asked how disappointed each of

[3] To reduce the skewness of the original income variable in the Add Health Parents data set family income was transformed using the Box-Cox family of transformations where $Income = \frac{(Income+1)^{0.2}-1}{0.2}$. For more on Box-Cox transformations, see Box and Cox (1964).

their parents would be if they failed to graduate from college and high school. Responses range from low disappointment (1) to high disappointment (5). The reliability coefficient for these items is 0.82. Responses were averaged to create an index. Parental educational expectations capture cultural variation in the family's emphasis on educational achievement, a family context characteristic that is often linked to immigrant academic success (Vernez and Abrahamse 1996). Parents' involvement is constructed out of nine items that inquire into the activities that parents and adolescents did together over the past four week period. For each parent adolescents were asked if they had together done each of the following: gone shopping, played a sport, attended a religious service or related event, talked about life, talked about a date or party attended, attended a movie, sports event, concert, play, or museum, talked about a personal problem, discussed grades or school work, worked on a school project, and talked about other school activities. Response choices are "yes" and "no." The activities undertaken by the adolescent and at least one parent were then summed to form the index. The parents' involvement scale has a Cronbach's alpha of 0.72. Parental supervision is a variable that ranges from 0 to 3. It is constructed by summing affirmative response to three items that indicate whether a parent is present in the home most or all of the time when the adolescent (1) goes to school in the morning, (2) comes home from school in the afternoon, and (3) goes to bed at night. The parental supervision scale has a Cronbach's alpha of 0.68.

SCHOOL-LEVEL VARIABLES

The school-level variables we focus on monitor two fundamental aspects of each school's student body: its racial/ethnic make-up and its socioeconomic composition. Although measures of school racial and ethnic composition (percentage Hispanic, percentage Asian, etc.) are not provided by the Add Health data, they can be directly calculated from the race/ethnicity

responses of the student body. School-level race/ethnicity codes for these calculations are defined using the same codes earlier described for individuals. Note, however, that although Asians will be considered as a distinct racial category in our analyses, they will not comprise part of our minority designation. Instead, we consider only Latinos and blacks as minority students when constructing our school-level measure monitoring the proportion of minority students in each school. This is done for two reasons. First, on average Latinos attend schools with much higher black enrollments than whites. Likewise, blacks on average attend schools with much higher Latino populations than whites. Second, Asians, the nation's most highly educated racial group, attend the most integrated schools and experience less linguistic segregation than Latinos (Orfield and Yun 1999). Finally, and consistent with oppositional culture theory, Asians are considered "voluntary minorities," while Latinos and blacks are classified as "involuntary minorities" (Fordham and Ogbu 1986; Ogbu 1974, 1991). Analyses presented below in Table 4 further document that on average the academic achievement of Asian students is higher than that of non-Hispanic whites.

To better understand the school-level SES construct this study will examine two variables that measure certain socioeconomic and educational characteristics of the students' families. These are family income and parental educational attainment, both of which are aggregated at the school-level. More specifically, we constructed an aggregate school-level SES measure as the sum of the standardized scores of parental income and education. This is appropriate as these two variables are strongly intercorrelated at the school-level (Cronbach's alpha = 0.90). At the individual-level, however, we consider it important for the purposes of the present study to analyze these two indicators separately. We are motivated by the fact that some immigrant groups, especially Latinos, report very low levels of educational attainment, in part because the

jobs (and therefore income) available to immigrants often do not correspond well with their educational attainment. This may explain why the reliability of the aggregate individual-level SES measure is lower (Cronbach's alpha = 0.71) than that of the school-level.

According to Blau (1994), students cannot form friendships with students of other racial and ethnic groups if schools are homogenous. Interracial contact is a prerequisite for the formation of interracial friendships. For this reason, we included a measure of network segregation within schools. Many students named as friends are also members of the sample. This allows friends and their characteristics to be matched based on their survey responses. Both the Add Health in-school and in-home questionnaires asked students to list their five best male and female friends (including girlfriends and boyfriends). For each participating school the Add Health obtained a roster of its students and assigned them identification numbers. These rosters enabled students to find their friends in their school and a sister school. These identification numbers enable the direct determination of the race/ethnicity of adolescents' friends. On the basis of friendship preferences, the Add Health constructed the modified Freeman's race segregation index (1978). This school-level index is calculated as follows:

$$Segregation\ \ Index\ \ = \frac{Expected\ \ \ Ties\ \ - \ \ Observed\ \ \ Ties}{Expected\ \ \ Ties}$$

where *ties* refers to the total number of ties sent from a network member sharing the same race/ethnicity to all network members of other races or ethnic origins, summed across all race/ethnicity categories. The segregation index has a theoretical minimum of -1 (pure out-group preference) and a theoretical maximum of 1 (pure in-group preference, or total segregation). A value of 0 indicates no group-preference, i.e. friendship ties are set randomly with respect to race/ethnicity.

Table 2 presents the means for the dependent variables educational achievement and attainment when cross-tabulated with independent variables monitoring school-level SES, percentage of minority students, and the peer network segregation index. These continuous independent measures were divided into categories that correspond to high, medium, and low SES levels based on the 25th and 75th percentiles of their respective distributions. Table 2 demonstrates that at both times schools with the lowest SES and the highest percentage of minority students had the lowest GPAs. However, those attending schools with the highest level of peer network segregation had the highest GPAs. These results suggest the possibility of a positive association between educational achievement and attainment, on the one hand, and school SES and peer network segregation, on the other. Similarly, a negative association between percent minority and academic achievement is plausible.

[Table 2 about here]

Auxiliary analyses indicate that two of these school-level variables, percentage minority and the racial segregation index, are slightly skewed. Skewed variables can produce heteroscedasticity and inflated standard errors of regression estimates. These problems reduce the statistical power of significance tests and result in larger confidence intervals, which make the rejection of the null hypotheses more difficult (Stevens 1996). To remedy this potential problem we transformed the percentage of minority students and the racial segregation index using the Box-Cox family of log-linear transformations (Box and Cox 1964).[4]

---

[4] We used the following formulas: $Percentage\ \ Minority = \frac{(Percentage\ \ Minority + 1)^{-0.2} - 1}{-0.2}$, and $Segregation\ \ Index = \frac{(Segregation\ \ Index + 1)^{-2} - 1}{-2}$. These transformations were obtained by running "Box-Cox" macro from the SAS library.

RESULTS

Below we present three sets of analyses. In the first two we model educational achievement and attainment (see Tables 3 and 4, respectively) while examining the effects of school contextual characteristics, peer social capital, family social capital, and individual-level controls. The third set of analyses (see Table 5) determines the effect of meso-level interaction terms on achievement and attainment. These terms monitor interactions between race/ethnicity (individual-level measures) and school-level SES and peer segregation (school-level measures). In all analyses parallel models were estimated for both achievement and attainment.

[Table 3 about here]

Model 1 of Table 3 documents the effects of school composition and peer social capital on achievement. It demonstrates that mean school SES significantly impacts academic achievement ($p<.001$). More specifically, the higher the average SES of schoolmates the higher a student's GPA. The other school-level variables included, percentage minority and peer network segregation, were both insignificant. Peer network achievement is the other significant predictor in the model. In all Table 3 models the effect of peer network achievement remains statistically significant even after controlling for SES and family social capital. Consistent with our prediction, the higher the achievement of students in a peer network, the higher the achievement of an individual student.

Model 2 of Table 3 adds individual-level predictors. This model is a significant improvement over Model 1 as revealed by the highly significant model comparison test. Model 2 reveals that when individual-level controls were added the measure mean school SES became insignificant. Almost all individual-level predictors were significant in the predicted direction. To begin, all racial/ethnic categories predicted GPAs significantly different from those of non-

Hispanic whites. The presence of "race gaps" (Jencks and Phillips 1998) in academic achievement was evident as Latino and black students had significantly lower achievement ($p<.001$) than non-Hispanic whites, while achievement of Asians was significantly higher ($p<.01$). The other individual-level controls show that younger adolescents, females, and those more frequently engaged in extracurricular activities had significantly higher achievement ($p<.001$) than did older adolescents, girls, and those less often engaged in extracurricular activities. The variables monitoring generational status revealed some surprising results. Namely, first- and second-generation immigrants significantly out performed the native-born (i.e., the U.S. born with both native-born parents). The observed immigrant advantage may be because of ethnic resilience or the ethnic social capital present in immigrant networks (see Ogbu 1981; Bankston, Caldas and Zhou, 1997; Borjas 1992). Our results support this notion as first generation immigrants consistently performed better than the comparison group ($p<.001$). Furthermore, although this advantage weakened with the second generation, it was still noticeable and statistically significant ($p<.01$).

Model 3 incorporates measures of family structure and size. Model comparison tests indicate that this model is a significant improvement over model 2 as both single- and non-parent households were statistically significant. More specifically, the educational achievement of children in single-parent and guardian families (i.e., homes headed by relatives other than parents) was worse than that of children reared in two-parent households. These findings are consistent with earlier research (Cox et al. 2001; Muller 1995; Nelson et al. 2001) which indicates that family structure has a significant impact on achievement. Note, however, that family size did not exert a significant effect on achievement.

Model 4 adds two measures of family socioeconomic status, parent's education and

family income. Again, a model comparison test documents that the addition of these two measures results in a significant improvement over model 3. As hypothesized, both new measures were very significant ($p<.001$) revealing that higher family SES resulted in higher GPAs. The addition of the family SES measures also caused the peer network segregation index to become significant for the first time ($p<.05$). The observed suppression effect suggests that the effect of peer network segregation is muted when the influence of family SES is not accounted for. Supplemental analyses further support this notion as they indicate there is negative association between family SES and peer network segregation (i.e., the Pearson correlation coefficient is -0.41). The negative association between family SES and peer network segregation, both of which have a positive effect on achievement, creates the suppression effect. In addition, the regression coefficient for Asians becomes insignificant in this model. From the above it follows that the Asian "advantage" over non-Hispanic whites in achievement is due to the difference in SES between the two groups. Model 5, the full model, adds three measures of family social capital. Again, model comparison tests show this to be a significant improvement over model 4 as all new measures were significant and, as expected, positively related to achievement. In addition, two school-level factors were significant in this model. As in model 4, the peer network segregation index remained significant and positively related to achievement. In this the full model, the mean SES of schoolmates is also significant and positively related to GPA. These results suggest that students are not only advantaged by strong family social capital, but also by segregated peer networks.

In general, all individual-level variables included in the Table 3 models conformed to expectations and corresponded to prior research. The school-level factors were more problematic. The percentage of minority students was never significant, while the other two,

mean school SES and the peer network segregation index were occasionally significant. According to a popular argument first put forward in the *Coleman Report* (Coleman et al. 1966) and since supported by various empirical studies (see a review of these studies in Kahlenberg 2001), it is school socioeconomic, not racial, composition that matters for adolescent academic outcomes. Our analyses presented in Table 3 clearly support this argument, as peer network segregation was a more significant predictor than school racial composition. This result corresponds with our expectations.

Table 4 repeats the above exercise with one important exception. Instead of academic achievement, we now model educational attainment in Wave 3 as the effect variable. Hence, this table shows the long-term effects of Wave 1 conditions. Perhaps as a consequence, several novel results are observed. Model 1 of Table 5, which documents the effects of school composition (both racial/ethnic and SES) and peer social capital presented by network segregation at the school level and network achievement at the individual level, again demonstrates that both mean school SES and peer network achievement significantly impact academic achievement ($p<.001$), while peer network segregation again remained insignificant. The analyses of variance components (not shown) document that school SES accounts for a larger share of between-school variation in attainment. This finding agrees with the analyses presented in Table 4 that the mean school SES effect on attainment is stronger than the effect of percentage of minority students. In the case of achievement, socioeconomic composition definitely matters more since racial/ethnic composition effects is not significant. Hence, when considering both achievement and attainment, socioeconomic composition is a more significant school context factor than racial/ethnic composition. Similar findings have also been reported by other studies of school context (Coleman et al. 1966; Crain and Mahard 1978; Jencks 1972). It should also be noted that

the strong and positive effect of peer network achievement persists in all Table 4 models. Moreover, auxiliary regression analyses using different race/ethnic reference groups, revealed that peer network achievement was still significant, implying that this factor impacts educational outcomes regardless of students' race/ethnicity. Percentage of minority students was also a significant positive predictor of attainment ($p<.001$), a result that remains in the next four models. Unexpectedly, the effect of this compositional factor was positive, not negative as predicted by the *Coleman Report* (Coleman et al. 1966) and the abundant research literature that followed in its footsteps (e.g., Caldas and Bankston 1998; Crain and Mahard 1978; Gerard 1988; Hawley and Smylie 1988; Longshore and Prager 1985;). In other words, the long-term effect of attending a school with large percentage of minority students ultimately leads to better attainment, which entails better occupational opportunities and so forth. Note that this effect is positive for majority non-Hispanic white students since they are the reference group in this and subsequent sets of regression analyses.[5] This important finding underscores the importance of continuing to monitor the long-term effects of desegregation (see more about long and short-term effects of desegregation in Kahlenberg 2001).

[Table 4 about here]

Model 2 adds the individual-level predictors. Although this model is a significant improvement over model 1, not all of the added individual-level controls were significant as earlier observed. The "race gap" (Jencks and Phillips 1998) disappears for all racial groups. This suggests that differences in attainment between majority and minority students, when present, are explained by other individual- and school-level factors, including peer social capital. The individual-level factors age, first generation status, and frequency of participation in

[5] The interactions of race/ethnicity variables and percentage of minority students will be discussed later (see Table 5).

extracurricular activities, were significant ($p<.001$) in the predicted direction and would remain so in the next three models. The effect of age, in contrast with Table 3 results, was positive, as older Wave 1 adolescents were more likely to have higher educational attainment. As in Table 3, the effect of immigrant status for generation 1 was significant, while second generation status was only modestly significant in model 2 ($p<.05$). Male, the other individual-level variable, was not statistically significant in this or any other Table 4 model, results that contrast with those observed in Table 3. Perhaps the most important result is the mediating effect of these individual-level measures on peer network segregation which became modestly significant in model 2 ($p<.05$). Because age, generational status and frequency of involvement in extracurricular activities are the only significant predictors among the included individual-level effects, these measures mediate the impact of peer network segregation on attainment. Only when the aforementioned variables are controlled does the previously suppressed effect of the peer network segregation index become significant. In sum, these analyses indicate that age, generational status and frequency of involvement in extracurricular activities enhance the positive effect of peer network segregation.

The addition of family structure measures in model 3 resulted in a significant improvement over model 2. Two of the three variables (i.e., non-parent and large households) were statistically significant predictors in the negative direction. The previously significant effect of immigrant generation 2 became insignificant, a result that would remain unchanged in the next two models. Hence, the positive effect of generation 2 on attainment is explained by family structure and size. Model 4 incorporates two additional family SES measures, while model 5, the full model, adds measures of family social capital. Each successive model was a significant improvement over the preceding fit. Note, however, that although parents' educational

expectations were consistently powerful predictors of both achievement and attainment ($p<.001$), the other two measures of family social capital, parental involvement and supervision, ceased to be significant in the case of attainment.

Thus, several individual-level measures that were significant predictors of achievement were insignificant predictors of attainment (i.e., race/ethnicity, gender, single parenthood, immigrant generation 2, parent's involvement and supervision). Similarly, two individual-level factors, age and household size, were significant predictors of attainment, but not achievement. The most likely explanation is that some factors have an immediate effect on educational outcomes, while the influence of other factors is experienced more intensely over a longer period of time. In theory, the long-term impact of the social environment in which one lived during adolescence should be distinguishable from its short-term impact (Galambos et al. 2003; Lareau 1989; Ogbu 1981). The former may have a distinct effect on life chances in adulthood (Bridge et al. 1979; Coleman et al. 1966). The other explanation of differential effects of individual-level factors on achievement and attainment rests in the nature of the GPA as a measure of educational achievement. Grades are strongly influenced by school policies, tracking, and teachers' expectations and attitudes. Since information on these factors is not available in the Add Health data it was not possible to control for all of them in this study.

[Table 5 about here]

Table 5 presents the HLM regression coefficients for models testing for three sets of interaction effects on academic achievement and attainment. These interaction terms are: average school SES times individual-level race/ethnicity variables (see part A), percentage of minority students times individual-level race/ethnicity variables (see part B), and the peer network segregation index times individual-level race/ethnicity variables (see part C). Model 1 for both

achievement and attainment is identical to model 5 of Tables 3 and 4, respectively. Model 2 adds the cross-level interactions. For the sake of parsimony, only the initial variables included are shown. Each part of Table 5 is considered separately. In the case of achievement, the interactions of race/ethnicity and average school SES are not significant. In the case of attainment, however, the interactions for African-American, Asian and Latino times school SES were all significant. The adverse effects of attending a low-quality school (if school quality can be defined in terms of the social class composition of the student body) applies to all adolescents ($p<.05$). This is compatible with findings of other studies that posited that attainment is positively associated with the socioeconomic status of schoolmates (e.g., Coleman et al. 1966; Kahlenberg 2001; Bankston and Caldas 1998).

In part B of Table 5 the interactions of the race/ethnicity measures times percentage of minority students are insignificant for educational achievement. For attainment, however, two interactions are significant. The first, Latino times percentage of minority students, is a positive predictor of attainment ($p<.001$), while Asian times percentage of minority students, is significant in the negative direction ($p<.05$). Although others indicate that student educational outcomes are worse, regardless of race or ethnicity, in high-percent minority schools (Caldas and Bankston 1998; Crain and Mahard 1978; Longshore and Prager 1985; Hawley and Smylie 1988), these results suggest that effects of school composition (i.e., race/ethnicity) differ depending on the specific group in question. Hence, the long-term educational effects of attending a high-percent minority schools appear to be beneficial for Latinos, but detrimental for Asians.

In Part C of Table 5 the interaction effects of peer segregation and race/ethnicity are examined. The effect of African-American times the peer segregation index is significant and positive ($p<.001$) for both achievement and attainment. Thus, the short- and long-term impacts of

peer network segregation for blacks is positive. In contrast, however, the interaction effects of peer segregation times Asian and Latino are both insignificant. In other words, these interactions show that blacks, unlike adolescents of other racial/ethnic groups, are more likely to have better outcomes in schools with more segregated peer networks. These findings diverge from commonly held assumptions about the impact of peer characteristics on black achievement. Oppositional culture theory maintains that an orientation towards co-racial peers harms the educational progress of black adolescents (Fordham and Ogbu 1086; Ogbu 1974). The contradiction between the tenets of oppositional culture theory and our results is not easily explained. However, we suggest that the effects of co-racial peers on black achievement should not be deemed a priori to be negative. In fact, as documented above, co-racial peers may provide greater support for achievement than non-co-racial peers.

These findings dispute commonly accepted notions about the influence of the school context and peer influence on educational outcomes (e.g., Ogbu 1974; 1991). First, it appears that educational attainment of all but Asian adolescents is not lower in schools with higher concentrations of minority students. Moreover, our results suggest that non-Hispanic whites and Latinos clearly profit from being enrolled in a high-percent minority school. This finding emphasizes the importance of long-term effects of desegregation which are often overlooked in a number of studies (e.g., Ascher 1992; Leake and Leake 1992; Rivkin 2000). These findings clearly warrant further examination of the differential effects of school racial/ethnic composition on educational attainment. Second, contrary to the tenets of the theory of oppositional culture (Ogbu 1974, 1991), co-racial friendships do not necessarily harm the academic outcomes of black adolescents. In fact, blacks in schools with a higher degree of peer network segregation are predicted to have better achievement and attainment.

In order to better understand how individual- and school-level variables affect academic achievement, future research should consider incorporating additional measures not in this study. Examples of such variables could include: administrators' attitudes, teachers' attitudes, tracking and school policies. Together these measures might help explain some of the potential sources of difference among schools.

CONCLUSION

This study began with a review of classic studies that examined the effects of school level SES and racial segregation. We next proceeded to provide a substantive and methodological update of this important research using recently collected national level data. Results from this update largely reinforced the findings of these earlier studies, and documented that adolescents in low-SES schools continue to be more likely to have poorer educational achievement and attainment than their co-racial counterparts in high-SES schools. This extension of prior research also revealed that adolescent educational outcomes, as measured by achievement and attainment, are more strongly affected by the socio-economic status of fellow students than by school racial/ethnic composition or peer network structure.

Our analyses of recently collected data also revealed a rather surprising result, one that may not have existed in the past or been possible to discern given the data and methodologies then available. Namely, the level of minority enrollment was found to be positively related to the educational attainment of non-Hispanic white and Latino students. The implications of this finding are certain to be met with skepticism; nonetheless, their policy relevance is undeniable, and our multilevel analyses of national data suggest that this is what has happened in US schools, at least during the 1994-2002 period.

These results suggest that desegregation benefits not only African-American students, a conclusion earlier reached by many other scholars, but also other groups, including whites and Latinos. Furthermore, these results mean that rather than desisting from their racial desegregation plans, policy makers should instead continue to strive for school level integration, as such policies have the potential to enhance the educational attainment of all students. However, such a recommendation clearly seems somewhat out of fashion given today's political environment, the nation's increasingly segregated schools, and the call from some black leaders to voluntarily segregate their school systems into racially identifiable districts (e.g., Omaha, Nebraska public schools).

Study results also clearly indicate that the structure of peer networks matters much less for educational achievement and attainment than the actual achievement of peers. More specifically, all of our regression models document that the average achievement of one's peer network has a strong and positive effect on both achievement and attainment. With respect to peer network structure, however, findings are mixed. To begin, non-Hispanic whites and blacks who attended schools where friendships were primarily within racial/ethnic groups were predicted to have better academic achievement than students in schools where friendships were formed across racial/ethnic groups. More importantly, both black achievement and attainment were positively related to peer network segregation. This finding stands in apparent contrast to other earlier studies.

The explanation of this apparent paradox may lie in the fact that other studies did not differentiate the effects of peer networks from the compositional effects, thereby ignoring the structural autonomy of the former, a point recognized by Blau's *macrosociological theory of social structure* Blau (1977, 1994; Blau and Schwartz 1984). Stated another way, the racial

composition of a school's student body provides the opportunity for interracial contact, while structure of peer networks reflects student behavior toward utilizing this opportunity. Finally, it is not necessary to see co-ethnic and co-racial friendships as obstacles to the educational assimilation of minority youth. However, it is essential to objectively evaluate the potential of such friendships to enhance and advance one's education and to serve as a locus of school-level ethnic social capital.

References

Ascher, Charles. 1992. "School Programs for African-American Males and Females." *Phi Delta Kappan* 73(10): 777-782.

Bahr, Stephen J, Anastasios C. Marcos and Suzanne L. Maughan. 1995. "Family, Educational and Peer Influences on the Alcohol Use of Female and Male Adolescents." *Journal of Studies on Alcohol* 56:457-469.

Bankston, Carl L., and Steven J. Caldas. 1996. "Majority African American Schools and Social Injustice: The Influence of De Facto Segregation on Academic Achievement." *Social Forces* 75:535-555.

Bankston, Carl L., and Steven J. Caldas. 1998. "The Inequality of Separation: Racial Composition of Schools and Academic Achievement." *Educational Administration Quarterly* 34:533-557.

Bankston, Carl L., and Steven J. Caldas. 2002. *A Troubled Dream: The Promise and Failure of School Desegregation in Louisiana.* Vanderbilt University Press.

Bankston, Carl L., Steven J. Caldas, and Min Zhou 1996. "The Academic Achievement of Vietnamese American Students: Ethnicity as Social Capital." *Sociological Focus* 30:1-16.

Becker, Gary S. 1962. "Investment in Human Capital: A Theoretical Analysis." *Journal of Political Economy* 70:9-49.

Berndt, Thomas J. 1979. "Developmental Changes in Conformity to Peers Parents." *Developmental Psychology* 15:608-616.

Berndt, Thomas J., and Keunho Keefe. 1995. "Friends' Influence on Adolescents Adjustment to School." *Child Development* 66:1312-1329.

Berndt, Thomas J., Ann E. Laychak, and Keunho Park. 1990. "Friends' Influence on Adolescent's Academic Achievement and Motivation: An Experimental Study." *Journal of Educational Psychology* 82:664-670.

Blau, Peter M. 1977. *Inequality and Heterogeneity: A Primitive Theory of Social Structure.* New York: Free Press.

Blau, Peter M. 1994. *Structural Contexts of Opportunities*. University of Chicago Press.

Blau, Peter M., and Joseph E. Schwartz. 1984. *Cross Cutting Social Circles: Testing a Macrostructural Theory of Intergroup Relations*. Academic Press.

Blum, Robert W., and Peggy Mann Rinehart. 1997. *Reducing the Risk: Connections that Make a Difference in the Lives of Youth.* University of Minnesota.

Borjas, George. 1992. "Ethnic Capital and Intergenerational Mobility." *Quarterly Journal of Economics* 85:365–90.

Borjas, George. 1995. "Ethnicity, Neighborhoods, and Human Capital Externalities." *American Economic Review* 85:365-390.

Box, George E.P., and David R. Cox. 1964. "An Analysis of Transformations." *Journal of the Royal Statistical Society* 26:211-243.

Bridge, R. Gary, Charles M. Judd, and Peter R. Moock. 1979. *The Determinants of Educational Outcomes*. Ballinger Publishing Company.

Bryk, Anthony, and Stephen W. Raudenbush. 1992. *Hierarchical Linear Models for Social and Behavioral Research: Applications and Data Analysis Methods.* Sage Publications.

Caldas, Steven J., and Carl L. Bankston. 1997. "Effect of School Population Socioeconomic

Status on Individual Academic Achievement." *Journal of Educational Research* 90:269-277.

Caldas, Steven J., and Carl L. Bankston 1998. "The Inequality of Separation: Racial Composition of Schools and Academic Achievement." *Educational Administration Quarterly* 34:533-557.

Carnevale, Anthony P. 1999. *Education = Success: Empowering Hispanic Youth and Adults.* Educational Testing Service.

Carter, Prudence L. 2003 "'Black' Cultural Capital, Status Positioning, and Schooling Conflicts for Low-Income African American Youth." *Social Problems* 50:136-55.

Chubb, John E. and Terry M. Moe. 1990. *Politics, Markets, and America's Schools.* The Brookings Institution.

Clotfelter, Charles T. 2001. "Are Whites Still Fleeing? Racial Patterns and Enrollment Shifts in Urban Public Schools, 1987-1996." *Journal of Policy Analysis and Management* 20(2):199-221.

Cohen, Elizabeth G. 1975. "The Effects of Desegregation on Race Relations." *Law and Contemporary Problems* 39(2):271-299.

Coleman, James S. 1988. "Social Capital in the Creation of Human Capital." *American Journal of Sociology* 94 (Supplement):95-120.

Coleman, James S., Ernest Q. Campbell, Carol J. Hobson, James McPartland, Alexander M. Mood, Frederic D. Weinfeld, and Robert L. York. 1966. *Equality of Educational Opportunity*. U.S. Government Printing Office.

Conger, Rand D., Katherine Jewsbury Conger, and Glen E. Elder. 1997. "Family Economic Hardship and Adolescent Adjustment: Mediating and Moderating Processes." Pp. 288–310 in *Consequences of Growing up Poor,* edited by Greg J. Duncan and Jeanne Brooks-Gunn. Russell Sage Foundation.

Conger, Rand D., Xiaojia Ge, Glen H. Elder, Jr., Frederick O. Lorenz, and Ronald L. Simons. 1994. "Economic Stress, Coercive Family Process, and Developmental Problems of Adolescents."

Child Development, 65, 541–561.

Cox, Martha J., Blair Paley, and Krisitina Harter. 2001. Interparental Conflict and Parent-Child Relationships. Pp. 249 – 273 in *Interparental Conflict and Child Development: Theory, Research, and Applications,* edited by John H. Grych and Frank D. Fincham. Cambridge, England: Cambridge University Press.

Crain, Robert L., and Rita E. Mahard. 1978. "School Racial Compositions and Black College Attendance and Achievement Test Performance." *Sociology of Education* 51, 81–101.

DiClemente, Carlo C. 1991. "Motivational Interviewing and the Stages of Change." Pp. 191-202 in *Motivational Interviewing: Preparing People to Change Addictive Behavior,* edited by William R. Miller and Stephen Rollnick. New York: Guilford Press.

Dishion, Thomas J., D.C. French, and Gerald R. Patterson, 1995. "The Development and Ecology of Child Antisocial Behavior." Pp. 421–471 in *Manual of Developmental Psychopathology,* edited by Dante Cicchetti and Donald J. Cohen. New York: Wiley

Dornbusch, Sanford M., Philip L. Ritter, Randy Mont-Reynaud and Zeng-yin Chen 1990. "Family Decision Making and Academic Performance in a Diverse High School Population." *Journal of Adolescent Research* 5(2): 143-160.

Dreeben, Robert, and Adam Gamoran. 1986. "Race, Instruction, and Learning." *American Sociological Review* 51:660–669.

Entwisle, Doris R. and Karl L. Alexander. 1992. "Summer Setback: Race, Poverty, School Composition, and Mathematics Achievement in the First Two Years of School." *American Sociological Review* 57: 72–84.

Epstein, Joyce L. 1983. "The Influence of Friends on Achievement and Affective Outcomes. Pp. 177-200 in *Friends in School: Patterns of Selection and Influence in Secondary Schools,* edited by J.L. Epstein and N. Karweit. New York: Academic Press.

Epstein, Joyce L. 1985. "After the Bus Arrives: Resegregation in Desegregated Schools." *Journal of Social Issues* 41:23-43.

Fordham, Signithia and John Ogbu. 1986. "Black Students' School Success: Coping with the 'Burden of Acting White'." *The Urban Review*, 18(3): 176-206.

Frankenberg, Erica, Chungmei Lee, and Gary Orfield. 2003. *A Multiracial Society with Segregated Schools: Are We Losing the Dream?* Cambridge, MA: The Civil Rights Project at Harvard University.

Freeman, Linton C. 1978. "Segregation in Social Networks." *Sociological Methods and Research* 6(4): 411-430.

Galambos, Nancy L., Erin T. Barker, and David M. Almeida. 2003. "Parents Do Matter: Trajectories of Change in Externalizing and Internalizing Problems in Early Adolescence." *Child Development* 74(2): 578-594.

Gerard, Harold B. 1988. "School Desegregation: The Social Science Role." Pp. 225-236 in *Eliminating Racism: Profiles in Controversy*, edited by Phyllis A. Katz and Dalmas A. Taylor. New York: Plenum Press.

Hallinan, Maureen T. 1982. "Classroom Racial Composition and Children's Friendships." *Social Forces* 59 (1): 225-245.

Hallinan, Maureen T., and Richard A. Williams. 1989. "Interracial Friendship Choices in Secondary Schools." *American Sociological Review* 54: 67-78.

Hallinan, Maureen, and Aage B. Sørensen. 1985. "Class Size, Ability Group Size, and Student Achievement." *American Journal of Education* 94(1):71-89.

Harris, Kathleen Mullan, Greg Duncan, and Johanne Boisjoly. 2002. "Evaluating the Role of "Nothing to Lose" Attitudes on Risky Behavior in Adolescence." *Social Forces* 80:1005-1039.

Hawley, Willis D., and Mark A. Smylie. The Contribution of School Desegregation to Academic Achievement and Racial Integration." Pp. 281-97 in *Eliminating Racism: Profiles in Controversy*, edited by Phyllis A. Katz and Dalmas A. Taylor. New York: Plenum Press.

Hetherington, E. Mavis. 1998. "Social Capital and the Development of Youth from Nondivorced, Divorced and Remarried Families." Pp. 177–209 in *Relationships as Developmental Contexts,*

edited by W. Andrew Collins and Brett Laursen. Mahwah, NJ: Erlbaum.

Hirschman, Charles. 2001. "The Educational Enrollment of Immigrant Youth: A Test of the Segmented-Assimilation Hypothesis." *Demography* 38:317–336.

Hofferth, Sandra L., Johanne Boisjoly, and Greg J. Duncan. 1999. "The Development of Social Capital." *Rationality and Society* 11(1):79-110.

Hoxby, Caroline M. 2000. "The Effects of Class Size on Student Achievement: New Evidence from Population Variation." *Quarterly Journal of Economics* 115(4):1239-1285.

Israel, Glenn D., Lionel J. Beaulieu and Glen Hartless. 2001. "The Influence of Family and Community Social Capital on Educational Achievement." *Rural Sociology* 66(1):43-68.

Jencks, Christopher. 1972. "The Coleman Report and the Conventional Wisdom." Pp. 87-105 in *On Equality of Educational Opportunity: Papers Deriving From the Harvard Faculty Seminar on the Coleman Report,* edited by Frederick Mosteller and Daniel P. Moynihan. New York: Random House.

Joyner, Kara, and Grace Kao. 2000. "School Racial Composition and Adolescent Racial Homophily." *Social Science Quarterly* 81(3):810-825.

Kahlenberg, Richard D. 1996. *The Remedy: Class, Race, and Affirmative Action*. New York: Basic Books.

Kahlenberg, Richard D. 2001. All Together Now: Creating Middle-Class Schools through Public School Choice. Washington, DC: Brookings Institution Press.

Kao, Grace, and Martha Tienda. 1995. "Optimism and Achievement: The Educational Performance of Immigrant Youth." *Social Science Quarterly* 76:1–19.

Kubitschek, Warren N., and Maureen T. Hallinan. 1998. "Tracking and Students' Friendships." *Social Psychology Quarterly* 61:1-15.

Laosa, Luis M. 1982. "School, Occupation, Culture, and Family: The Impact of Parental Schooling on the Parent-Child Relationship." *Journal of Educational Psychology* 74: 791-827.

Lareau, Annette. 1989. *Home Advantage: Social Class and Parent Intervention in Elementary*

Education: The Falmer Press.

Leake, Donald, and Brenda Leake 1992. "African-American Immersion Schools in Milwaukee: A View from the Inside." *Phi Delta Kappan* 73: 783-785.

Lee, Seh-Ahn. 1993. "Family Structure Effects on Student Outcomes." Pp. 43-75 in *Parents, Their Children, and Schools*, edited by Barbara Schneider and James S. Coleman. Boulder, CO: Westview.

Lin, Nan. 1990. "Social Resources and Instrumental Action." Pp. 247-271 in *Social Mobility and Social Structure,* edited by Ronald L. Breiger. Cambridge, U.K.: Cambridge University Press.

Longshore, Douglas, and Jeffrey Prager. 1985. "The Impact of School Desegregation: A Situational Analysis." *American Review of Sociology* 11:75-91.

Mahard, Rita E. and Robert L. Crain. 1983. "Research on Minority Achievement in Desegregated Schools." Pp. 103-125 in *The Consequences of School Desegregation,* edited by Christine H. Rossell and Willis D. Hawley. Philadelphia: Temple University Press.Madaus, George F., Thomas Kellaghan, Ernest A Rakow, and Dennis J. King. 1979. "The Sensitivity of Measures of School Effectiveness." *Harvard Educational Review* 49(2): 207–230.

Maran, Meredith. 2000. *Class Dismissed: A Year in the Life of an American High School: A Glimpse Into the Heart of a Nation.* New York: St. Martin's Press.

McLoyd, Vonnie C. 1998. "Socioeconomic Disadvantage and Child Development." *American Psychologist* 53:185–204.

McNeal, Ralph B., Jr. 2001. "Differential Effects of Parental Involvement on Cognitive and Behavioral Outcomes by Socioeconomic Status. *The Journal of Socio-Economics* 30(2): 171-144.

Moody, James. 2001. "Race, School Integration, and Friendship Segregation in America." *American Journal of Sociology* 107(3):679-716.

Morgan, Stephen L., and Aage B. Sørensen. 1999. "Parental Networks, Social Closure, and Mathematics Learning: A Test of Coleman's Social Capital Explanation of School Effects." *American Sociological Review* 64:661–681.

Muller, C. 1995. "Maternal Employment, Parent Involvement, and Mathematics Achievement." *Journal of Marriage and the Family* 57(1): 85-100.

Nelson, Sandi, Rebecca Clark, and Gregory Acs. 2001. "Beyond the Two-Parent Family: How Teenagers Fare in Cohabiting Couple and Blended Families." Pp. 1-6 in *Assessing the New Federalism.* Policy Brief B-31. Washington, DC: The Urban Institute.

Ogbu, John. 1974. *The Next Generation: An Ethnography of Education in an Urban Neighborhood*. New York: Academic Press.

Ogbu, John. 1981. "Origins of Human Competence: A Cultural-Ecological Perspective." *Child Development* 52: 413–429.

Orfield, Gary, and John T. Yun. 1999. *Resegregation in American Schools.* Cambridge, MA: The Civil Rights Project at Harvard University.

Orfield, Gary, Susan E. Eaton, and Elaine R. Jones, 1997. *Dismantling Desegregation: The Quiet Reversal of Brown V. Board of Education*: The New Press.

Orfield, Gary. 1978. *Must We Bus? Segregated Schools and National Policy*. Washington, DC: Brookings Institution.

Patterson, Gerald R., John B. Reid, and Thomas J. Dishion. 1992. *Antisocial Boys.* Eugene, OR: Castalia.

Portes, Alejandro and Ruben G. Rumbaut. 2001. *Legacies: The Story of the Immigrant Second Generation*: University of California Press.

Portes, Alejandro and Min Zhou. 1993. "The New Second Generation: Segmented Assimilation and Its Variants." *The Annals of the American Academy of Political and Social Sciences,* 530:74-96.

Portes, Alejandro. 1998. "Social Capital: Its Origins and Applications in Modern Sociology." *Annual Review of Sociology* 24:1-24.

Puma, Michael, Nancy Karweit, Cristofer Price, Anne Ricciuti, William Thompson, and Michael Vaden-Kiernan. 1997. *Prospects: Student Outcomes Final Report.* Washington, DC: U.S.

Department of Education.

Raudenbush, S. and A. Bryk. 2002. Hierarchical Linear Models: Applications and Data Analysis Methods. 2d ed. Thousand Oaks, CA: Sage.

Raudenbush, S. W., and Willms, J. D. 1995. "The Estimation of School Effects." *Journal of Educational and Behavioral Statistic,* 20(4):307–335.

Rivkin, Steven G. 2000. "School Desegregation, Academic Attainment, and Earnings." *The Journal of Human Resources* 35:333-346.

Roscigno, Vincent J. 1998. "Race and the Reproduction of Educational Disadvantage." *Social Forces* 76(3):1033–60.

Savin-Williams, Ritch and Thomas Berndt. 1990. "Friendships and Peer Relations." Pp. 277-307 in *At the Threshold*, edited by Shirley Feldman and Glen Elliott. Cambridge, MA: Harvard.

Schneider, Barbara and James S. Coleman. 1993. *Parents, Their Children, and Schools*: Westview Press.

Schofield, Janet. 1993. "Promoting Positive Peer Relations in Desegregated Schools." *Educational Policy* 7:297–317.

Steinberg, Laurence D., Sanford M. Dornbusch, and B. Bradford. 1992. "Ethnic Differences in Adolescent Achievement: An Ecological Perspective." *American Psychologist* 47(6):723-729.

Stevens, J. 1996. *Applied Multivariate Statistics for the Social Sciences,* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Sui-Chu, Esther Ho, and J. Douglas Williams. 1996. "Effects of Parental Involvement on Eighth-Grade Achievement," *Sociology of Education* 69:130-138.

Tatum, Beverly Daniel. 1999. *Why Are All the Black Kids Sitting Together in the Cafeteria?* New York: Basic Books.

Thomson, Elizabeth, Thomas L. Hanson, Sara S. McLanahan. 1994. "Family Structure and Child Well-Being: Economic Resources vs. Parental Behaviors." *Social Forces* 73(1):221–242.

Tienda, Marta, and Ronald J. Angel. 1982. "Headship and Household Composition Among Blacks,

Hispanics and Other Whites." *Social Forces* 61:508-531.

U.S. Department of Education. 1999. *State Nonfiscal Survey of Public Elementary/Secondary Education, 1991-92 and 2001-02*. National Center for Education Statistics.

Vernez, Georges, and Allan Abrahamse. 1996. *How Immigrants Fare in U.S. Education*: RAND.

Wentzel, Kathryn, and Kathryn Caldwell. 1997. "Friendships, Peer Acceptance, Group Membership: Relations to Academic Achievement in Middle School," *Child Development* 68:1198–1209.

Zhou, Min, and Carl L. Bankston. 1998. "Social Capital and Immigrant Children's Achievement." *Research in Sociology of Education* 13:13-39.

Table 1. Means and Standard Deviations of Study Variables (N=19,117).

	Weighted Mean	St. Deviation
Peer Social Capital		
Peer Network Segregation Index [a]	0.25	0.10
Peer Network Achievement	2.81	0.69
School Composition		
Average SES	0.85	0.02
Percentage of Minority Students [a]	0.26	0.18
Dependent Variables		
Educational Achievement	2.82	0.76
Educational Attainment	13.07	3.33
Race/Ethnicity		
African-American	0.16	0.36
Asian	0.05	0.23
Latino	0.14	0.35
Non-Hispanic whites	0.65	0.45
Family Structure		
Two-Parent Household	0.59	0.50
Single-Parent Household	0.24	0.43
Non-Parent Household	0.17	0.38
Large Household	0.20	0.40
SES		
Parents' Education	5.42	2.27
Family Income [a]	5.27	1.48
Family Social Capital		
Parents' Educational Expectations	4.33	0.89
Parents' Involvement	0.43	0.29
Parents' Supervision	3.83	0.70
Individual-Level Controls		
Age	14.98	1.66
Male	0.49	0.01
Immigrant Generation 1	0.05	0.21
Immigrant Generation 2	0.09	0.29
Extracurricular Activities	1.39	1.56

[a] Percentage of minority students, peer network segregation index, and family income were transformed by the Box-Cox method in order to satisfy the multilevel normality condition of HLM (see more on HLM in Raudenbush and Bryk 2002).

[b] Educational attainment is provided in the Wave 3 data. The rest of variables examined above are obtained from the Wave 1 data.

Table 2. Average Educational Achievement and Attainment in Schools with High, Medium and Low School SES, Percentages of Minority Youth and Peer Network Segregation Index.

School-Level Variable	Educational Achievement	Educational Attainment
School SES		
High	2.98	14.03
Medium	2.79	13.10
Low	2.66	12.38
Percentage Minority in School		
High	2.66	12.49
Medium	2.80	13.08
Low	2.87	13.39
Peer Network Segregation Index		
High	2.92	13.51
Medium	2.86	13.12
Low	2.65	12.04

Table 3. HLM Regression Models of School- and Individual-Level Predictors on Educational Achievement in Wave 1.

	Models				
	1	**2**	**3**	**4**	**5**
School-Level Factors					
Average SES	3.14 ***	1.35	1.18	1.26	1.49 *
Percentage of Minority Students	-0.22	-0.25	-0.20	-0.11	-0.09
Peer Network Segregation Index	0.04	0.03	0.04	0.19 *	0.18 *
Individual-Level Factors					
Peer Social Capital					
Average GPA of Peer Network	1.69 ***	1.23 ***	1.32 ***	0.53 ***	0.41 ***
Race/Ethnicity					
African-American [a]		-0.08 ***	-0.07 ***	-0.06 *	-0.06 *
Asian [a]		0.10 **	0.10 *	0.03	0.04
Latino [a]		-0.11 ***	-0.08 ***	-0.10 ***	-0.09 ***
Individual-Level Controls					
Age		-0.06 *	0.04	-0.04	-0.04
Female [d]		0.23 ***	0.23 ***	0.24 ***	0.23 ***
Immigrant Generation 1 [e]		0.27 ***	0.25 ***	0.23 ***	0.2 ***
Immigrant Generation 2 [e]		0.08 **	0.07 **	0.07 **	0.07 **
Extracurricular Activities		0.12 ***	0.10 ***	0.09 ***	0.09 ***
Family Structure and Size					
Single-Parent Household [b]			-0.09 ***	-0.06 ***	-0.09 ***
Non-Parent Household [b]			-0.10 ***	-0.09 ***	-0.09 ***
Large Household [c]			-0.04	-0.03	-0.03
Socioeconomic Status					
Parents' Education				0.04 ***	0.05 ***
Family Income				0.06 ***	0.06 ***
Family Social Capital					
Parents' Educational Expectations					0.08 ***
Parents' Involvement					0.07 *
Parents' Supervision					0.04 ***
Constant	0.98 ***	0.95 ***	0.91 ***	0.90 ***	0.91 ***
Model Comparison Test(df)[6]		1,140 ***	128 **	163 ***	191 ***
models compared		1 and 2	2 and 3	3 and 4	4 and 5

*p<0.05; **p<0.01; ***p<0.001.

Reference Categories: a – non-Hispanic white; b – two-parent household; c – household of up to four residents; d – female; e – two native born parents.

[6] The test is analogous to the nested F-test for OLS regression models. It is based on the difference between the deviance statistics (defined as -2 ln likelihood function value at convergence) of Models 1 and 2. It has a chi-square distribution with degrees of freedom equal to the difference in the number of parameters estimated in the models. The model comparison test is not applicable for models that differ only in the number of level-2 factors or cross-level interactions.

Table 4. HLM Regression Models of School- and Individual-Level Predictors of Educational Attainment in Wave 3.

	Models				
	1	**2**	**3**	**4**	**5**
School-Level Factors					
Average SES	13.82 ***	13.65 ***	13.19 ***	12.78 ***	13.07 ***
Percentage of Minority Students	3.54 ***	2.81 ***	2.63 ***	2.05 ***	2.47 ***
Peer Network Segregation Index	0.48	1.02 *	0.90 *	0.52	0.43
Individual-Level Factors					
Peer Social Capital					
Average GPA of Peer Network	0.95 ***	1.01 ***	0.93 ***	0.80 ***	0.78 ***
Race/Ethnicity					
African-American [a]		0.10	0.13	0.13	0.12
Asian [a]		0.04	0.07	0.03	0.06
Latino [a]		-0.13	-0.12	-0.10	-0.11
Individual-Level Controls					
Age		0.34 ***	0.32 ***	0.29 ***	0.30 ***
Female [d]		0.05	0.03	0.03	0.03
Immigrant Generation 1 [e]		0.47 ***	0.42 ***	0.43 ***	0.42 ***
Immigrant Generation 2 [e]		0.15 *	0.10	0.10	0.11
Extracurricular Activities		0.16 ***	0.15 ***	0.13 ***	0.12 ***
Family Structure and Size					
Single-Parent Household [b]			0.12	0.10	0.13
Non-Parent Household [b]			-0.15 *	-0.18 ***	-0.21 ***
Large Household [c]			-0.26 ***	-0.21 ***	-0.26 ***
Socioeconomic Status					
Parents' Education				0.14 ***	0.14 ***
Family Income				0.23 ***	0.25 ***
Family Social Capital					
Parents' Educational Expectations					0.13 ***
Parents' Involvement					-0.02
Parents' Supervision					-0.08
Constant	9.43 ***	7.79 ***	7.26 ***	7.05 ***	6.81 ***
Model Comparison Test(df)		866 ***	311 **	224 ***	105 *
models compared		1 and 2	2 and 3	3 and 4	4 and 5

*p<0.05; **p<0.01; ***p<0.001.

Reference Categories: a – non-Hispanic white; b – two-parent household; c – household of up to four residents; d – female; e – two native born parents.

Table 5. HLM Regression Coefficients of School-Level Factors, Race/ethnicity and Their Interactions. [a]

Part A. Interaction Effects of Race/ethnicity and Average School SES		Educational Achievement		Educational Attainment	
		Models			
		1	2	1	2
School-Level Factors					
Average SES		1.49 *	1.17	13.07 ***	6.10 *
Percentage of Minority Students		-0.09	0.02	2.47 ***	3.41 ***
Racial Segregation Index		0.18 *	0.19 *	0.43	1.43 *
Race/ethnicity					
African-American		-0.06 *	-0.08 ***	0.12	-0.02
Asian		0.04	0.04	0.06	0.06
Latino		-0.09 ***	-0.15 ***	-0.11	-0.07
Interactions of:					
African-American	Average SES		-1.76		2.86 ***
Asian	Average SES		0.65		1.32 *
Latino	Average SES		-1.41		0.67 *
Part B. Interaction Effects of Race/ethnicity and Percentage of Minority Students					
School-Level Factors					
Average SES		1.49 *	1.74 ***	13.07 ***	3.74
Percentage of Minority Students		-0.09	0.02	2.47 ***	4.46 ***
Racial Segregation Index		0.18 *	0.04	0.43	0.11
Race/ethnicity					
African-American		-0.06 *	-0.14 ***	0.12	-0.18
Asian		0.04	0.09	0.06	0.19
Latino		-0.09 ***	-0.17 *	-0.11	-0.16
Interactions of:					
African-American	Percentage of Minority		0.22		0.17
Asian	Percentage of Minority		-0.14		-1.43 *
Latino	Percentage of Minority		0.11		0.82 ***
Part C. Interaction Effects of Race/ethnicity and Peer Segregation Index					
School-Level Factors					
Average SES		1.49 *	1.13	13.07 ***	2.04
Percentage of Minority Students		-0.09	-0.15	2.47 ***	3.54 *
Racial Segregation Index		0.18 *	0.13	0.43	0.18
Race/ethnicity					
African-American		-0.06 *	-0.12 *	0.12	0.11
Asian		0.04	-0.01	0.06	0.08
Latino		-0.09 ***	-0.17 ***	-0.11	-0.05
Interactions of:					
African-American	Peer Segregation Index		0.36 ***		1.55 ***
Asian	Peer Segregation Index		-0.16		-0.23
Latino	Peer Segregation Index		-0.08		0.47

*p<0.05; **p<0.01; ***p<0.001.

[a] Model 2 controls for all individual-level factors, including educational achievement in the Wave 3 models. Regression coefficients of the control variables are not shown for the sake of the space.