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A multilevel model of educational expectations of secondary school students in the United States

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Abstract Using the Educational Longitudinal Survey of 2002, we investigate variation in factors that contribute to Asian, Black, Hispanic, and White students' educational expectations. Separate multilevel models demonstrate group variation in student and school-level influences. Academic and school factors explained the most variation in White students' expectations. School characteristics were least predictive of Black student expectations. For Hispanic students, the overall influence of family socioeconomic status (SES) was explained by school level SES. These results support research on student-level predictors of expectations and present new evidence of school-level predictors. The impact of academic track perceptions on expectations is established, as are the effects of certain experiences and school contexts, especially sports participation and Catholic/private school attendance. A model comparing all four groups supported the separate group models and also revealed that student-level factors have a weaker influence on Asians and high crime neighborhoods inflate the expectations of Hispanics but not similarly situated Black students.

Keywords Educational aspirations · Educational expectations · College plans · Academic experiences · School influences

Abbreviations

CPS	Current population survey
ELS	Education longitudinal survey
ESL	English second language services
FRL	Free and reduced lunch
HLM	Hierarchical linear modeling

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HSD Honestly significant difference
SES Socioeconomic status
SPED Special education

1 Introduction

The belief that anyone can and should go to college appears to be an integral element of the American psyche. Just over 90% of 10th graders surveyed in the 2002 Education Longitudinal Survey (ELS:2002) expect to attend college and roughly 79% plan to attain at least a baccalaureate degree. Another 6% expect to attain at least an associates or vocational degree. Even though the American ideal has long been to pursue a post-secondary degree, only in the last decade or so have the majority of secondary school students reported that they expect to attain at least a baccalaureate degree. In 1980, 1990, and 2002, 41, 60, and 79% of secondary school students surveyed expected to attain at least a bachelor's degree Cahalan et al. (2006), indicating a 48% increase over 22 years that does not vary substantially by race, sex, or socioeconomic status.

Rates of postsecondary educational attainment suggest that only 60% of the ELS:2002 students are likely to attend college and just over a quarter are likely to earn a bachelor's degree (Current Population Survey (CPS) 2002, 2004). Moreover, attainment rates for both high school and college completion flattened in the late 1990s and there is evidence of a decline in educational attainment in Western states beginning in 2000 (Evans et al. 2009). Currently, about 50% of Asians 25 years and older have at least a bachelor's degree compared to 30% of non-Hispanic Whites, 17% of Blacks, and 11% of Hispanics (CPS 2004). Postsecondary attainment rates and evidence of a national educational ceiling reveal that a sizeable percentage of 10th graders will fail to translate their ambitions into reality, especially if they are members of a disadvantaged ethnic minority. Therefore, the purpose of this paper is to investigate the determinants of educational expectations for student race/ethnic groups and to explore dynamics that may underlie continuing attainment disparities.

Bourdieu and Passeron (1977) argued that occupation determines one's chance for upward mobility, and high school students' opportunities for upward mobility are determined by their parents' occupations more than by the students' own efforts, thereby reproducing the social order. If true, such a scenario contradicts two fundamental assumptions of the US educational system—first, that social mobility is achieved through education, and second, that access and credentials are awarded on the basis of merit. In order for the educational system to be perceived as legitimate, students must believe the educational opportunity structure is open to their efforts and that if they merit success (i.e. credentials of status), they will obtain it (Bourdieu 1977). Student educational expectations in the ELS:2002 suggest that students do in fact perceive the educational opportunity structure to be open; however, our analysis suggests that their expectations are not dependent on either their social background or on their own merits. To the extent that postsecondary educational attainment depends on academic success in high school, high school students who do not perceive the need to succeed as essential for the fulfillment of their postsecondary

expectations will fail to translate their ambitions into reality. Unfulfilled expectations may have both individual and social consequences such as decreased support or funding for education, especially if unfulfilled expectations are found to be group specific.

Several decades of research have shown academic achievement is positively associated with educational expectations (Brookover et al. 1967; Carpenter and Fleishmann 1987; Hossler and Stage 1992; Trusty 2000). Moreover, specific and early academic experiences, such as repeating a grade, appear to be even stronger predictors of educational expectations than are standardized measures of academic achievement (Hanson 1994; Kao and Tienda 1998). That said, the strength of the association between expectations and achievement or experiences has diminished over the last few decades (Morgan 1996; Reynolds and Pemberton 2001; Trusty 2000). In contrast, academic achievement and experiences, especially curriculum intensity, remain principal indicators of postsecondary attendance and attainment (Adelman 1999, 2006). In other words, postsecondary educational attainment still rests on academic performance in high school, while students' expectations that they will go to college have become increasingly out of sync with this reality.

In evaluating the determinants of students' educational expectations, we examine many potential sources of influence on expectations from family background, academic performance and experiences, and others' expectations to the characteristics of schools and their surrounding communities. Because attainment rates vary substantially by race/ethnicity, we review research on educational expectations taking care to point out race and ethnic differences in expectations at both the student and school level. We also briefly review factors that influence race/ethnic differences in postsecondary degree attainment and integrate these two streams of research. We then use hierarchical linear modeling to evaluate the influence of student and school or community factors on the educational expectations of student race/ethnic groups both independently and comparatively.

2 Educational expectations of secondary students in the US

If all high school students, regardless of their social characteristics, perceived their future educational success to depend upon their own merits, then we would not expect to find variation in educational expectations by race/ethnicity that was not explained by educational achievement. However, research into the educational expectations[1] of earlier cohorts of students in national longitudinal studies, such as the National Educational Longitudinal Study of 1988 (NELS:88), found that expectations do vary

[1] Research on students' educational aspirations and expectations tends to blur the distinctions among aspirations, expectations, and plans (Adelman 2006; Brookover et al. 1967). Educational aspirations refer to the desires of students to attain higher levels of education (e.g., "I would like to go to college."); whereas educational expectations are students' anticipation of future accomplishments (e.g., "I am going to attain a college degree.") (Brookover et al. 1967; Mickelson 1990). The most concrete educational expectations are those that indicate specific plans, such as the intention to attend a specific school or type of school such as a community college (Hossler and Stage 1992). We use the author's terminology as often as possible; however, we use the term expectations to make summary or global statements.

independent of achievement by race/ethnicity, by sex and by parental socioeconomic status (SES) (Kao and Tienda 1998; Trusty 2000). Racial/ethnic groups vary in terms of how high they tend to set their educational expectations, as well as how stable those expectations are over time. For example, Black and Hispanic males have higher expectations than white males but they are less likely to maintain them over time. When English is the second language for students or their parents, educational expectations tend to be lower (Behnke et al. 2004; McWhirter et al. 1998). In addition, the greater a student's acculturation into the dominant culture, the less impact language status has on educational expectations (McWhirter et al. 1998; Ramos and Sanchez 1995), especially for girls (McWhirter et al. 1998). Asian immigrants or children of Asian immigrants also tend to have high family educational expectations that enhance achievement and aspirations (Hao and Bonstead-Bruns 1998; Kao and Tienda 1998).

Integration into the school environment, like acculturation in the dominant culture, may reflect a student's level of identification with educational norms through interpersonal contact with people who tend to support educational pursuits and goals (e.g. teachers and coaches). Extracurricular involvements in team sports and club participation have both been shown to be positively related to educational expectations, especially for minority students (Lipscomb 2007; Marsh 1992). Likewise, when clubs are achievement-oriented and include high-achieving students, the positive impact of participation on educational expectations is even greater.

Parental SES has also been found to be positively associated with educational expectations, primarily through parents' educational background (Hanson 1994; Hossler et al. 1999; Trusty 2000). In fact, low SES is the strongest predictor of reduced educational aspirations and expectations not pursued (Hanson 1994). Parental educational expectations also contribute positively to the stability of student expectations independent of family SES (Trusty 1998, 2000; Hossler et al. 1999; Garge et al. 2002); a factor found to be especially important for first-generation students intending to go to college (McCarron and Inkelas 2006). Parents' combined education status has been shown to be positively associated with both parent expectations and student expectations (Hossler and Stage 1992). Students with at least one parent with a bachelor's degree are increasingly more likely to apply to any college, especially when it comes to highly selective 4-year colleges (Turley et al. 2007). High SES also influences educational expectations through indirect means, such as private school tuition or college savings accounts, both of which are associated with students' postsecondary expectations (Coleman and Hoffer 1987; Hossler and Vesper 1993). To the extent that family SES overlaps with race/ethnicity, in that disadvantaged racial/ethnic groups tend to have lower SES, family SES may partially explain racial/ethnic differences in educational expectations. Nonetheless, over the past 30 years, parents across all levels of SES and within each race group have been increasingly likely to advise students to attend college regardless of the student's achievement history Cahalan et al. (2006).

Few studies of students' educational expectations have considered school or community characteristics, though several studies on other educational outcomes such as educational attainment and test scores have done so. For example, school size, racial composition, school average SES, and neighborhood SES independently affect a variety of educational outcomes (Ainsworth 2002; Boardman and Robert 2000; Braddock 1980; Bryk and Raudenbush 1986; Kaufman and Rosenbaum 1992; Lee

and Smith 1997; Marsh 1991). Lee and Smith (1997) found the optimum school size for educational outcomes to be between 600 and 900 students. Neighborhoods also have indirect influences on student outcomes which are independent of aggregate measures of demographic characteristics. Neighborhoods represent the nature of interactions among individuals in a community—the community ethos—which constrains and facilitates the development and transmission of educational attitudes (Garner and Raudenbush 1991). Neighborhood crime, for instance, represents the indirect influence of community control and cohesion among neighborhood residents (Klonsky 1995; Sampson and Raudenbush 1997) and has been found to be related to academic outcomes such as grades and school satisfaction (Rosenfeld et al. 2006).

Studies that have directly examined the relationship of educational expectations to school characteristics show that school average SES is positively associated with student expectations as well as achievement (Bryk and Raudenbush 1986; Marsh 1991). Similarly, neighborhood SES has been linked to student educational expectations and academic outcomes more generally (Ainsworth 2002). The association between neighborhood SES and student expectations, though small, appears to be independent of the individual-level influence of family SES (Boardman and Robert 2000). School type is probably the best known school level indicator of student educational expectations. Students in private schools, especially Catholic and religious schools, tend to have greater educational expectations than students in public schools in the United States (Coleman and Hoffer 1987; Corton and Dronkers 2006). Private and Catholic schools focus their curricula more on core academics, create a stronger sense of community, and stimulate greater parent involvement (Bryk et al. 1993; Coleman and Hoffer 1987). These attributes integrate students from disparate family backgrounds into school cultures characterized by their high expectations for both academic performance and educational attainment.

Finally, school location (i.e., urbanicity and region) has been shown to be related to student educational expectations and outcomes. Rural students have the lowest educational expectations (Herzog and Pittman 1995) an effect which may be due in part to the fact that rural schools serve a high percentage of students who receive free and reduced meals, a proxy for family SES (Lee and Smith 1997). Students enrolled in urban secondary schools, as opposed to rural schools, enroll in college at significantly higher rates and tend to apply to more selective colleges (Karen 2002). Students in suburban secondary schools tend to have the highest educational expectations and outcomes. Regional differences and influences have not been explored directly in research; however, persistent regional differences in educational attainment rates (Census 2000 2003) and economic returns on education (CPS 2002) suggest that regional differences may reflect variations in the value communities place on postsecondary education. In the Western US, for instance, growth in both the skilled and unskilled job market provides students with opportunities that do not necessarily require postsecondary training; in contrast, the Northeast has experienced a decline in the availability of unskilled occupations (McGranahan 1995). Furthermore, Karen (2002) suggests that region may be a significant source of social class characteristics such as economic, cultural, and social capital.

In sum, research on the educational expectations of student cohorts reveal that student expectations vary according to race/ethnicity, gender, parental SES and

expectations, and school type, size, and location, as well as a variety of academic and school experiences, such as sport and club participation. Postsecondary attainment in comparison to educational expectations has been shown to vary according to similar factors; however, the contribution of achievement and academic experiences to postsecondary attendance and degree attainment are far more narrow and robust (Adelman 1999, 2004, 2006). The intensity of a student's curriculum in high school is by far the strongest predictor of educational attainment followed by class rank, GPA, and test scores, and then by socioeconomic status which has a modest but consistent influence (Adelman 1999, 2004, 2006). Students who take advanced placement courses and earn advanced math credits (beyond Algebra 2—trigonometry, precalculus, etc.) more than double their odds of completing a bachelor's degree (Adelman 1999). For Black, Hispanic, and low-SES students, the intensity of a curriculum has an even greater impact on college completion rates (Adelman 1999; Battle and Pastrana 2007; Contreras 2005). Unfortunately, Black and Hispanic students are less likely to take advanced placement courses or exams and advanced math (Mortenson 1991; Contreras 2005; Velez 1985), in part, because they are less likely to attend high schools that offer advanced math courses (Adelman 2006). Studies that investigate the influence of academic track (i.e. college preparatory, general and vocational education) also find that students in the college preparatory track are much more likely to attend and complete college, even when they have low academic aptitude or performance (Alexander et al. 1987, 2007). That said, high-SES students in lower tracks do have an increased likelihood of attending college over their similarly tracked peers (Alexander et al. 1987). In addition, Black and Hispanic students are proportionately less likely to be in the college preparatory track when academic achievement is controlled (Hallinan 1994).

Educational expectations appear to differ by both social and school characteristics and academic experiences, whereas experiences which improve postsecondary attainment have been found to be primarily academic in nature with the notable exception of the modest but consistent contribution of SES. Consequently, to investigate the contribution of such factors to this newest cohort of 10th graders' educational expectations, we construct separate multilevel models of educational expectations. We believe separate models enhance our ability to assess the influence of both social factors and academic experiences on expectations while controlling for the fact that minority students are less likely to attend schools which offer a wide range of academic experiences. Our focus is to identify which factors may contribute to inflated expectations early in a student's high school career for each group separately. However, we also construct a comparison multilevel model in order to evaluate the effects of social and academic factors on each group relative to the other groups. Differences between student groups also serve to assess the structural significance of social location of each group in the educational system.

3 Current study and hypotheses

Student academic experiences and success are the primary determinants of postsecondary educational success; however, these same predictors do not necessarily

underlie students' expectations that they will succeed in college. Educational expectations appear to be extremely high when compared to their likelihood of postsecondary attendance and attainment. The increase in educational expectations has not been coupled with an increase in educational attainment as Census rates of educational attainment have flattened over the last few decades. Today, roughly 60% of Black and Hispanic students are not likely to attain their educational expectations of a bachelor's degree or higher compared to 53% of White students and 38% of Asian students (CPS 2004). Thus, it appears likely that many students lack an understanding of the types of experiences, and sometimes lack the opportunity to have the experiences that they need to pursue in secondary school in order to succeed in college.

To investigate the influence of academic and social factors on expectations, this study incorporates individual, school, and community-level indicators to estimate a multilevel model of educational expectations for Asian, Black, Hispanic, and White students both separately and together. Prior research on educational expectations has not systematically included multiple measures at the school and community level. We expect to find different arrangements of factors by race or ethnic group. Though all student groups may be said to have inflated expectations, for the gap between expectations and likely attainment is great, both US. Census rates and research reveals that disadvantaged minority student groups have expectations which are more inflated than others (Kao and Tienda 1998; Mickelson 1990). Therefore, we hypothesize that the determinants of college expectations will be substantially different for advantaged versus disadvantaged racial/ethnic groups. Asian and White students are categorized as advantaged and Black and Hispanic students are categorized as disadvantaged for the latter have historically had less access to and success in the educational system in the United States.

For the relatively advantaged groups of Asians and Whites, we hypothesize that college expectations will be based upon their academic experiences, successes and direct support from their relatively educated parents than on more distal social factors such as school demographic composition. This is because we expect that Asian and White students have access to more concrete information on what it takes to succeed in college from readily available college educated role models. In contrast, for the relatively disadvantaged groups of Blacks and Hispanics, we hypothesize that their college expectations will be high regardless of their family background or relative success in high school because we expect they have less access to information on what is required for college success. In addition, we expect school and community factors to be related to Black and Hispanic student expectations though not in the manner typically expected. Specifically, we expect Black and Hispanic students in environments that have been found to be negatively related to educational attainment to have more inflated educational expectations than Asians and Whites. This is because in such environments they likely have less access to information and to positive role models that would help them develop more realistic educational expectations. Ultimately, the better we are able to understand the underpinnings of students' educational expectations, the better we will be able to isolate the sources of inflated expectations and advise students to pursue academic experiences which directly support their educational attainment goals.

4 Data and methods

4.1 Sample

The ELS:2002 is a national survey of 10th graders conducted by the National Center for Education Statistics (see Ingles et al. 2004 for dataset information). Schools were stratified by metropolitan status (urban, suburban, and rural) and randomly selected from eight census regions[2] using a two-stage sample with probability proportionate to size. Of the 752 schools that participated, 15,362 10th graders (roughly 26 per school) completed the 2002 base-year questionnaire, as did 13,486 parents, and 743 principals. Catholic schools and other private schools were sampled at a higher rate, as were Hispanic and Asian students. Cognitive tests in reading and math were administered to students the spring of 2002. Students and principals completed self-administered surveys and parents were contacted by telephone.

For our purposes, we limit the ELS:2002 sample to schools with male and female participants for which a school administrator questionnaire ($N = 613$) was completed. We further limit the sample to the 10,892 Asian, Black, Hispanic, and White students who responded with a valid educational intention, further limiting the sample to 612 schools. All analyses are weighted to correct for non-response and disproportionate stratified sampling and the weights are normalized to reflect the actual sample size. Only variables with fewer than 10% missing cases were included in the analysis (see details in Table 2). The pattern of missing data was determined to be random;[3] thus, we used mean replacement to impute missing values at the student and school level. Because mean replacement may increase Type I error by reducing the variance, we compared the results of the larger sample with imputed data to the smaller list wise sample and the results were essentially the same. Although imputation methods exist which would have allowed us to include more academic experiences and interpersonal information that relates experiences with and the influence of teachers and peers, we believe the variables we chose to utilize represent an adequate and parsimonious picture of both positive and negative academic, social, and school characteristics.

4.2 Measurement

All composite measures and their Chronbach's alpha levels are presented in the Table 2. The dependent variable in all analyses is a composite measure of students' educational expectations and plans. Students first indicated their educational expectations on an item that asked, "As things stand now, how far in school do you think you will get?" with the following response options: less than high school, high school graduation

[2] New England/Middle Atlantic (CT, ME, MA, NH, NJ, NY, PA, RI, VT), East North Central (IL, IN, MI, OH, WI), West North Central (IA, KS, MN, MO, NE, ND, SD), South Atlantic (DE, DC, FL, GA, MD, NC, SC, VA, WV), East South Central (AL, KY, MS, TN), West South Central (AR, LA, OK, TX), Mountain (AZ, CO, ID, MT, NV, NM, UT, WY), and Pacific (AK, CA, HI, OR, WA).

[3] Independent t-tests between missing and non-missing groups did not reveal significant differences between group means.

or GED, attend or complete 2-year college/school, attend college but 4-year degree incomplete, graduate from college, obtain master's degree or equivalent, obtain PhD, MD, or other advanced degree, and don't know. The 'don't know' option, which was selected by 1357 students or 9% of respondents, was considered missing and these students were omitted from the analysis.[4] Students who intended to go to college were also asked, "Do you plan to continue your education right after high school or at some time in the future?" with response options for *timing of entry* plans collapsed into three categories, (a) no plans to continue to college, (b) eventually or more than a year after high school graduation, and (c) immediately, less than a year after high school graduation, and matched to student responses of their expectations. The 2.7% of students who indicated that they intend to attend college but who did not provide a valid indication for timing of entry were coded as *eventually* in combination with their reported intention.

We evaluated students' timing of entry plans in combination with the students' intended level of educational attainment to ensure we were analyzing a concrete rather than an abstract educational intention. The combined measure accentuates timing of entry over the type of college such that a student who intends to *eventually* enter school and attain a bachelor's degree is treated as having lower educational expectations than the student who intends to *immediately* go to college and attain a 2-year degree. This ranking reflects what Adelman (2006) found to be a reversal of a trend noted in studies of the HSB: 80 cohort (see Velez 1985; Adelman 1999). Eight years after students in the NELS:88 cohort graduated from high school, timing of entry into college had a greater impact on persistence and degree completion than the type of college entered (2-year vs. 4-year, public vs. private) (Adelman 2006).

Measures of students' demographic characteristics include sex (1 = male), SES, student native language status (1 = Native English), and the college generational status (1 = At least one parent has baccalaureate degree). Measures of student academic achievement are norm-referenced standardized test scores that reflect the average of the student's standardized reading and math test scores, re-standardized to a national mean of 50 and a standard deviation of 10. The student's self-reported school track (college preparatory, general, or vocational/technical) is also included even though a majority of school administrators did not report having rigid tracking policies. Thus, this measure often reflects the students' perception of their track position relative to their peers. Other measures of academic experiences include whether or not the student was ever in an advanced placement program, English as a second language program, dropout prevention program, or took a college preparatory course. Indicators of

[4] The meaning of "don't know" is ambiguous and does not necessarily mean low educational expectations. Nonetheless, we conducted a multilevel logistic regression analysis with a binary dependent variable coded 1 for "don't know" and zero for those with specific educational expectations. The results indicate students with higher SES, students in the vocational or general track as compared to the academic track, and students who have been in an ESL program are all more likely to not know their educational expectations in the tenth grade. In contrast, students in larger schools, private or Catholic schools, and schools in the South, Midwest, and Northeast are all less likely to report "don't know." Similarly, students with a college-educated parent(s), with higher math scores, whose parents' aspirations are higher, whose friends value grades, who have been in college prep courses or programs, and who have participated in school clubs are less likely to not know their post-secondary plans.

students' identification with their school include their involvement in sports and clubs, class unpreparedness (e.g. does the student go to class with the necessary books and materials), and a composite measure of school avoidance activities such as the frequency the student reported being tardy, ditching, or suspended. We also included two indicators representing expectations of others: the students' report of the importance of grades to their three closest friends and the parents' educational aspirations for their children as reported in the parent survey.

Demographic characteristics of schools include a categorical measure of school size (minimum 1–399 and maximum 2,500 students) and three dummy variables indicating school type (public, private, Catholic). Measures of the composition of the student body include a categorical indicator of the percent of students who receive free and reduced lunch (FRL) as a proxy for school average SES and the percent of students who receive special education (SPED) and English second language services (ESL). The school administrator's report of the school's learning climate is included and reflects the administrator's assessment of several factors: teacher and student morale, teacher emphasis on achievement and homework, and the overall priority of learning in the school. The administrator's perception of crime in the local community is also included on a scale of 1 to 3, low to high. Finally, community-level indicators consist of metropolitan status (urban, suburban, rural) and region (northeast, midwest, west, south) both variables were dummy coded.

4.3 Methods

In the ELS:2002 survey students were sampled within schools. Students who attend the same school are subject to similar influences and are therefore more likely to have similar outcomes relative to students in other environments (Raudenbush and Bryk 2002). We account for the interdependence of individual and school properties by using hierarchical linear modeling (HLM), a method designed for analysis of nested relationships (Raudenbush and Bryk 2002). In the first level of the model, we examine the influence of student characteristics and students' academic experience on students' educational expectations, while at level two we examine the impact of school and community characteristics on level-one coefficients and student outcomes.

Separate models are estimated for Asian, Black, Hispanic, and White students. Student-level predictors are centered around their group or school mean, while school and community indicators are centered around the grand mean of the available sample. At each level, blocks of conceptually related variables are entered into the regression and assessed by the p-values for each variable and change in the p-values as new blocks are added. Change in the intraclass correlation coefficient (ICC), which relates information on the change in explained variance, and the proportion of variance explained are also evaluated and discussed. The four conceptually-related blocks of variables at level one correspond to student demographics, achievement, expectations of others, and academic experiences, while the four blocks at level two represent school composition, school learning context, school type, school location. Although we describe significant changes in the models at both level one and level two as we add each block of variables, we only depict in table form changes at level one (see Tables 3 and 4)

because the addition of the level two school blocks exhibited for less change as each block was added at level two.

5 Results

5.1 Descriptive statistics

Table 1 presents frequencies and percentages within race for the composite measure of student educational expectations for the sample as a whole as well as separately by race. Overall, students' average level of educational expectations is roughly equal to an intention to attend college immediately following high school and pursue a 4-year degree though without an expectation to complete this degree ($M = 8.6$, $\mathrm{SD} = 3.27$). Categorically, the average describes White and Black student expectations. Asian students have the highest educational expectations the mean of which can be described as an intention to attend college immediately and complete a 4-year degree. Hispanics, in contrast, have the lowest expectations to immediately attend and complete a 2-year degree or certificate. An ANOVA with a post hoc Tukey honestly significant difference (HSD) test revealed that the mean differences between Asians and Hispanics and the other student groups are significant, although the mean difference between Black and White student groups are not significantly different from each other.

Considering how large the differences are between groups, according to Census and CPS data, in the percentage who graduate from college, racial/ethnic differences in educational expectations are relatively small, suggesting that the groups who have proven to have the lowest levels of college graduation in the past (Hispanics and Blacks) have rather inflated educational expectations in comparison with Whites and Asians.

Descriptive statistics for the independent variables for the sample as a whole as well as separately by race are presented in Table 2. Overall, this sample reflects the greater population of the United States in that it is 50.8% female, 49.2% male, as well as 69.7% White, not Hispanic, 13% Black, and 14% Hispanic, with roughly equal proportions of males and females across race groups. Only the Asian student group is disproportionately represented in the sample (12%) compared to their representation in the US population (4%; Census 2000). The majority of students are native English speakers (89%). However, this differs substantially by race for only 32% of Asians and half of the Hispanic students reported that English is their native language, in contrast, 97% of Whites and 95% of Blacks reported similarly. Forty-one percent of all students have at least one parent with a baccalaureate degree but this differs by race group as well: 53% of Asians, 32% of Blacks, 25% of Hispanics, and 46% of Whites have parents with at least a baccalaureate degree.

An ANOVA with a post hoc Tukey's HSD test revealed consistent and significant differences between Asian, Black, Hispanic, and White students across almost all student and many school indicators. For example, students by group have significantly different means across demographics, achievement, interpersonal expectations, and academic experience indicators. White students have significantly higher SES, math and reading scores, and personal reports of being in the college academic track than

Table 1 Educational expectations for Asian, Black, Hispanic, & White students in sample

			Eventual entry into college					Immediate entry into college					Total	Mean (SD)
	1 Less than HS	2 HS grad, no plans	3 Complete 2 year degree	4 Attend college, but no degree	5 Obtain 4 year degree	6 Obtain masters	7 Obtain PHD, MD	8 Complete 2 year degree	9 Attend college, but no degree	10 Obtain 4 year degree	11 Obtain masters	12 Obtain PHD, MD		
Total	101	810	397	218	1,077	379	242	341	242	3,211	2,067	1,807	10,892	8.60 (3.27)
% Of total	1	8	4	2	10	4	2	3	2	29	19	16	100	
Asian	9	38	18	14	70	30	18	22	33	315	222	257	1,046	9.56 (2.79)[a,b]
% Within race	1	4	2	1	7	3	2	2	3	30	21	25	100	
Black	19	139	36	45	127	45	28	45	53	451	196	258	1,442	8.52 (3.36)[a,b]
% Within race	1	10	3	3	9	3	2	3	4	31	14	18	100	
Hispanic	29	164	54	51	196	56	37	51	53	417	246	191	1,545	7.99 (3.46)[a,b]
% Within race	2	11	4	3	13	4	2	3	3	27	16	12	100	
White	44	469	289	108	684	248	159	223	103	2,028	1,403	1,101	6,859	8.74 (3.20)[a,b]
% Within race	0.6	7	4	2	10	4	2	3	2	30	21	16	100	

The mean difference between Black and White student groups is not significant at $p < .05$

[a] The mean difference between Asian educational intentions and Black, Hispanic, and White student groups is significant at $p < .001$

[b] The mean difference between Hispanic educational intentions and Asian, Black, and White student groups is significant at $p < .001$

Table 2 Response categories and missing, as well as means and differences for Asian, Black, Hispanic, & White students at the student and school levels, differences determined with an ANOVA and post hoc Tukey HSD

	Response categories	Missing	Asian $n = 1406$ (12%) Mean (SD)	Black $n = 1442$ (13%) Mean (SD)	Hispanic $n = 1545$ (14%) Mean (SD)	White $n = 6859$ (61%) Mean (SD)
Demographics						
SES	Continuous	0	0.05 (0.85)^{b,c}	−0.22(0.70)^{a,c}	−0.35(0.75)^{a,b}	0.21 (0.68)^{a,b,c}
Language status	1 = Native English	0	0.32 (0.46)^{b,c}	0.95 (0.23)^{a,c}	0.5 (0.50)^{a,b}	0.97 (0.17)^{a,b,c}
Generational status	1 = At least one parent has Bachelors	0	0.53 (0.50)^{b,c}	0.32 (0.47)^{a,c}	0.25 (0.45)^{a,b}	0.46 (0.50)^{a,b,c}
Sex	1 = Male	0	0.5 (0.50)	0.5 (0.50)	0.5 (0.50)	0.49 (0.50)
Achievement						
Math test score	Continuous	0	54.57 (10.44)^{b,c}	44.4 (8.38)^{a,c}	46.11 (9.71)^{a,b}	53.22 (9.08)^{a,b,c}
Reading test score	Continuous	0	50.84 (10.18)^{b,c}	45.36 (8.66)^{a}	46.18 (9.65)^{a}	53.08 (9.40)^{a,b,c}
College prep track	1 = Yes	0	0.61 (0.48)^{b,c}	0.52 (0.50)^{a}	0.48 (0.50)^{a}	0.58 (0.49)^{b,c}
General education track	1 = Yes	0	0.29 (0.46)^{c}	0.32 (0.47)^{c}	0.41 (0.49)^{a,b}	0.35 (0.48)^{a,c}
Vocational education track	1 = Yes	0	0.1 (0.30)^{b}	0.16 (0.37)^{a,c}	0.12 (0.32)^{b}	0.08 (0.27)^{b,c}
Expectations of others						
Parent aspirations	1 = Less than H.S. grad…7 = PhD, MD, …	0	5.75 (1.14)^{b,c}	5.63 (1.30)^{a,c}	5.49 (1.35)^{a,b}	5.31 (1.21)^{a,b,c}
Importance of grades friends	Composite mean alpha = .55 1 = not important … 3 = Very important	755 (6%)	2.45 (0.44)^{b}	2.52 (0.44)^{a,c}	2.46 (0.44)^{b}	2.38 (0.42)^{a,b,c}

Table 2 continued

	Response categories	Missing	Asian $n = 1406$ (12%) Mean (SD)	Black $n = 1442$ (13%) Mean (SD)	Hispanic $n = 1545$ (14%) Mean (SD)	White $n = 6859$ (61%) Mean (SD)
Academic experiences						
Ever in advanced placement	1 = Yes	689 (6%)	0.22 (0.40)[b,c]	0.16 (0.35)[a]	0.18 (0.37)[a]	0.19 (0.38)
Ever in ESL program	1 = Yes	786 (6%)	0.17 (0.37)[b]	0.09 (0.27)[a,c]	0.15 (0.35)[b]	0.06 (0.23)[a,b,c]
Ever in dropout prevention	1 = Yes	720 (6%)	0.03 (0.16)[c]	0.04 (0.19)[c]	0.06 (0.23)[a,b]	0.02 (0.12)[b,c]
Ever in special education	1 = Yes	740 (6%)	0.07 (0.24)[c]	0.09 (0.27)	0.1 (0.29)[a]	0.07 (0.24)[c]
Ever in college prep program	1 = Yes	740 (6%)	0.23 (0.41)[b]	0.32 (0.45)[a,c]	0.25 (0.42)[b]	0.2 (0.39)[a,b,c]
Sports involvement	1 = Yes, at least one sport	1,017 (8%)	0.25 (0.41)[b]	0.38 (0.46)[a,c]	0.28 (0.42)[b]	0.41 (0.47)[a,c]
Club participation	1 = Yes, at least one club	354 (3%)	0.62 (0.47)[b,c]	0.48 (0.48)[a,c]	0.42 (0.48)[a,b]	0.57 (0.49)[b,c]
School avoidance activities	Composite mean alpha = .691 = Never …5 = 10 + more	532 (4%)	1.45 (0.50)[b,c]	1.66 (0.58)[a]	1.66 (0.64)[a]	1.47 (0.50)[b,c]
Class unpreparedness	Composite mean alpha = .81 1 = Never …4 = Usually	639 (5%)	1.85 (0.86)[b,c]	1.98 (0.84)[a]	1.97 (0.86)[a]	1.77 (0.71)[a,b,c]
School composition(Missing at school level reflects number of missing for administrator survey matched to student sample size)						
School size (categorical)	1 = 1–399 … 8 = 2,500 or more students	460 (4%)	5.73 (2.29)[b,c]	5.28 (2.33)[a,c]	5.19 (2.43)[a,b]	4.66 (2.46)[a,b,c]

Table 2 continued

	Response categories	Missing	Asian $n = 1406$ (12%) Mean (SD)	Black $n = 1442$ (13%) Mean (SD)	Hispanic $n = 1545$ (14%) Mean (SD)	White $n = 6859$ (61%) Mean (SD)
Percent FRL (categorical)	1 = 0–5% … 7 = 76–100%	945 (8%)	3.15 (1.82)^{b,c}	3.58 (1.88)^{a}	3.5 (1.85)^{a}	3.1 (1.75) ^{a,b,c}
% 10th graders in special education	%	626 (5%)	9.83 (6.83)^{b,c}	10.13 (9.69)^{a}	10.09 (8.19)^{a}	9.47 (7.87)^{b,c}
% 10th graders receive ESL	%	407 (3%)	5.17 (8.43)^{b}	4.53 (9.24)^{a,c}	4.63 (8.70)^{b}	3.38 (7.58)^{a,b,c}
Learning context						
Crime in student's neighborhood	1 = Low, 2 = moderate, 3 = high	107 (1%)	1.37 (0.55)^{b,c}	1.46 (0.59) ^{a}	1.41 (0.58)^{a}	1.32 (0.51) ^{a,b,c}
School academic climate	Composite mean alpha = .87 1 = Not accurate at all … 5 = Very accurate	630 (5%)	3.95 (0.64)^{b,c}	3.86 (0.64)^{a,c}	3.85 (0.65)^{a,b}	3.93 (0.64)^{a,b,c}
School tracking policy	0 = Undifferentiated or differentiated but open, 1 = differentiated with grouping	239 (2%)	0.16 (0.36)	0.16(0.36)	0.14(0.34)	0.15(0.36)^{c}
School type						
Public		0	0.87 (0.33)^{b,c}	0.85(0.36)^{a}	0.87(0.34)^{a}	0.81(0.39)^{a,b,c}
Private		0	0.07 (0.25)	0.07(0.25)	0.04(0.21)	0.1(0.30)^{a,b,c}
Catholic		0	0.06 (0.24)^{b,c}	0.08(0.28)^{a}	0.09(0.29)^{a}	0.09(0.29)^{a,b}
School location						
Urban		0	0.36 (0.48)^{b,c}	0.36(0.48)^{a}	0.33(0.47)^{a}	0.26(0.44)^{a,b,c}
Suburban		0	0.52 (0.50)^{b,c}	0.48(0.50)^{a,c}	0.5(0.50)^{a,c}	0.52(0.50)^{b,c}

Table 2 continued

Response categories	Missing	Asian $n = 1406$ (12%) Mean (SD)	Black $n = 1442$ (13%) Mean (SD)	Hispanic $n = 1545$ (14%) Mean (SD)	White $n = 6859$ (61%) Mean (SD)
Rural	0	0.12 (0.33)[b]	0.15(0.36)[a]	0.17(0.38)	0.21(0.41)[a,b,c]
Northeast	0	0.2 (0.40)[b,c]	0.15(0.36)[a]	0.18(0.39)[a]	0.17(0.37)[b,c]
Midwest	0	0.21 (0.41)	0.2(0.40)[c]	0.21(0.41)[b]	0.26(0.44)[a,b,c]
South	0	0.34 (0.47)[b,c]	0.5(0.50)[a,c]	0.35(0.48)[a,b]	0.38(0.49)[a,b]
West	0	0.25 (0.43)[b,c]	0.15(0.36)[a,c]	0.25(0.44)[a,b]	0.19(0.39)[a,b,c]

White mean differences are evident in notation provided for comparison with other student groups

[a] The mean difference between Asians and a student group is significant at 0.05 level

[b] The mean difference between Blacks and a student group is significant at 0.05 level

[c] The mean difference between Hispanics and a student group is significant at 0.05 level

Black and Hispanic students. Hispanic students are significantly more likely than other students to report being in the general education track and Black students are more likely than any group to report being in the vocational education track. Regarding the expectations of significant others, Asian students have the highest parental aspirations though Black students report the highest level of the importance of grades to friends. Expectations of others appear to be the lowest for White students overall. Black and Hispanic students, in contrast, are more often found in academic programs that may reflect an "at-risk" status in comparison with Asian and White students. Finally, Asians report the highest club participation though not significantly different from White students, though they also report along with Hispanics students the lowest sport participation.

At the school level, Asian, Black, and Hispanic students attend significantly larger schools with larger proportions of FRL, SPED, and ESL students. Between the minority student groups, Asians are more likely to attend schools with ESL services, while Black and Hispanic students are more likely to attend schools with a higher percent of FRL and SPED students. Asian and White students tend to live in neighborhoods their administrators describes as low crime, as well as attend schools their administrators describe as positive academic climates (e.g. high moral and a school wide focus on learning) than either Black or Hispanic student groups. Minority students are more likely to attend urban and public schools and White students are more likely to attend Catholic schools. White students are the most likely to attend rural and private schools of all student groups. Finally, Hispanic students are more likely to be in the Northeast and West, Asian and Black students in the South, and White students in the Midwest.

5.2 Multilevel models

5.2.1 Separate models by race/ethnicity

Tables 3 and 4 present the student-level and school-level models of educational expectations for Asian and White students and Black and Hispanic students respectively, and the results from both tables are summarized simultaneously. We describe the changes in p-values and increments in explained variance that took place as blocks of variables were added sequentially. The intercepts for Asian, Black, Hispanic, and White students' educational expectations reveal that students in each group, all else being equal, expect to immediately attend college after high school, though Asians intend to complete a 4-year degree, Black and White students intend to pursue though not complete a 4-year degree, and Hispanics intend to complete a 2-year degree. The intercepts vary little across models. Family SES was initially associated with greater educational expectations for all but Asian students. Family SES dropped to non-significance for Blacks after academic experiences were added; upon further investigation it appears that the addition of sport participation explained the contribution of family SES. This suggests that family SES affects Black student expectations indirectly by increasing their likelihood of sports participation, which in turn increased expectations. Hispanic family SES was significant at the student level across models yet it was the only student level factor to decrease to non-significance upon the addition of the school and

Table 3 HLM Estimated effects for 10th grade Asian and White student educational expectations from the ELS:2002

	Asian				White			
	1	2	3	4	1	2	3	4
Intercept	9.69 (.15)***	9.69 (.15)***	9.69 (.15)***	9.67 (.13)***	8.97 (.08)***	8.96 (.08)***	8.97 (.08)***	8.63 (.06)***
Student level 1—demographics and achievement								
SES	.10 (.16)	.07 (.15)	.05 (.14)	.05 (.15)	.81 (.12)***	.63 (.11)***	.57 (.01)***	.57 (.11)***
Generation	.30 (.30)	.23 (.30)	.20 (.31)	.20 (.31)	.00 (.15)	.01 (.15)	.01 (.14)	.01 (.14)
Language	.02 (.29)	.14 (.29)	.14 (.30)	.15 (.31)	−.11 (.27)	−.11 (.27)	−.14 (.27)	−.08 (.26)
Male	−.47 (.24)*	−.38 (.24)	−.29 (.21)	−.29 (.21)	−1.12 (.09)***	−.94 (.10)***	−.84 (.10)***	−.84 (.10)***
Math	.05 (.02)*	.05 (.02)*	.04 (.02)*	.04 (.02)*	.07 (.01)***	.05 (.01)***	0.05 (.01)***	.05 (.01)***
Reading	.02 (.02)	.01 (.02)	.01 (.02)	.01 (.02)	.04 (.01)***	.03 (.01)***	0.02 (.01)**	.02 (.01)**
General track	−.74 (.33)*	−.75 (.32)*	−.57 (.34)	−.57 (.34)	−1.05 (.11)***	−.82 (.11)***	−.65 (.11)**	−.65 (.11)***
Voc-Ed track	−.80 (.49)	−.78 (.49)	−.75 (.50)	−.75 (.49)	−1.21 (.24)***	−.88 (.23)***	−.72 (.24)***	−.73 (.24)**
Expectations of others								
Parent aspirations		.30 (.11)**	.25 (.10)*	.25 (.11)*		.63 (.08)***	.58 (.05)***	.58 (.05)***
Grades to friends		.63 (.27)*	.46 (.28)	.47 (.28)		.73 (.11)***	.53 (.10)***	.53 (.10)***
Academic experiences								
AP class			.33 (.22)	.32 (.22)			.25 (.10)**	.26 (.10)**
ESL program			−.24 (.36)	−.24 (.37)			.48 (.21)**	.50 (.21)*
Dropout program			.58 (.65)	.57 (.65)			−.37 (.38)	−.39 (.40)
Special Ed. program			.28 (.81)	.28 (.81)			−.41 (.18)*	−.41 (.18)*

Table 3 continued

	Asian				White			
	1	2	3	4	1	2	3	4
College prep class			.29 (.22)	.29 (.22)			.22 (.11)	.22 (.11)
Sport participation			.00 (.25)	.01 (.25)			.44 (.09)***	.44 (.09)***
Clubs involvement			.41 (.28)	.41 (.27)			.28 (.09)**	.27 (.10)**
School avoidance			−.52 (.20)**	−.53 (.20)**			−.81 (.10)***	−.81 (.10)***
Class unpreparedness			−.08 (.11)	−.08 (.11)			−.05 (.07)	−.06 (.07)
School level 2—school composition								
Size				.06 (.07)				.14 (.03)***
% FRL				−.17 (.07)*				−.15 (.04)***
% SPED				−.01 (.02)				−.01 (.01)
% ESL				−.03 (.01)*				.00 (.01)
Learning context								
Neighborhood crime				−.19 (.22)				−.26 (.13)*
School climate				.47 (.22)*				.25 (.10)*
Tracking policy				−.12 (.31)				−.13 (.16)
School type								
Catholic				.89 (.35)*				1.35 (.22)***
Private				.93 (.60)				1.46 (.20)***
School location								
Urban				.03 (.27)				−.18 (.14)
Rural				−.01 (.40)				−.37 (.16)*
South				.14 (.32)				.51 (.18)**
Midwest				−.60 (.35)				.21 (.18)
Northeast				.25 (.28)				.42 (.20)*

Table 3 continued

	Asian				White			
	1	2	3	4	1	2	3	4
Cross-level interactions								
SES by catholic								−.45 (.16)**
SES by private								−.42 (.15)**
Model fit statistics								
Intraclass correlation coefficient	0.18	0.19	0.19	0.10	0.17	0.17	0.16	0.09
Proportion of variance explained	0.23	0.25	0.26	0.26	0.31	0.36	0.39	0.39

Standard errors appear in parentheses below the estimated coefficient
* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4 HLM estimated effects for 10th grade Black and Hispanic student educational expectations from the ELS:2002

	Black				Hispanic			
	1	2	3	4	1	2	3	4
Intercept	8.71 (.14)***	8.71 (.14)***	8.71 (.14)***	8.66 (.12)***	8.36 (.15)***	8.37 (.15)***	8.36 (.15)***	8.01 (.13)***
Student level 1—demographics and achievement								
SES	.57 (.21)***	.43 (.20)*	.37 (.20)	.37 (.20)	.55 (.20)**	.42 (.21)*	.40 (.21)*	.39 (.21)^
Generation	−.09 (.30)	−.14 (.30)	−.10 (.28)	−.10 (.28)	.51 (.32)	.55 (.33)	.52 (.31)	.57 (.31)
Language	.25 (.47)	.32 (.48)	.24 (.48)	.26 (.48)	−.05 (.28)	−.10 (.26)	−.02 (.26)	−.03 (.26)
Male	−.84 (.19)***	−.68 (.18)***	−.62 (.18)**	−.63 (.18)**	−1.08 (.23)***	−.77 (.23)**	−.71 (.24)**	−.74 (.24)**
Math	.05 (.02)**	.05 (.02)**	.04 (.02)**	.04 (.02)*	.07 (.02)**	.06 (.02)**	.05 (.02)**	.05 (.02)*
Reading	.06 (.02)**	.06 (.02)**	.05 (.02)**	.05 (.02)**	.04 (.02)*	.03 (.02)	.03 (.02)	.02 (.02)
General track	−.81 (.28)**	−.62 (.27)*	−.50 (.25)	−.51 (.26)	−1.02 (.23)***	−.89 (.22)***	−.75 (.23)**	−.78 (.24)**
Voc-Ed track	−1.45 (.34)***	−1.36 (.37)**	−1.13 (.39)**	−1.12 (.39)**	−.49 (.39)	−.58 (.38)	−.46 (.39)	−.49 (.39)
Expectations of others								
Parent aspirations		.43 (.08)***	.40 (.08)***	.40 (.08)***		.54 (.09)***	.52 (.10)***	.53 (.09)***
Grades to friends		.14 (.20)	.02 (.19)	.02 (.18)		.58 (.20)**	.27 (.21)	.26 (.21)
Academic experiences								
AP class			.31 (.27)	.32 (.28)			.38 (.32)	.36 (.32)
ESL program			−.28 (.39)	−.28 (.40)			.14 (.37)	.13 (.37)
Dropout program			−.28 (.68)	−.29 (.68)			−.48 (.57)	−.46 (.58)
Special Ed. program			−.15 (.52)	−.13 (.52)			−.47 (.48)	−.49 (.47)
College prep class			.04 (.27)	.05 (.27)			.16 (.26)	.15 (.26)

Table 4 continued

	Black				Hispanic			
	1	2	3	4	1	2	3	4
Sport participation			.66 (.24)**	.66 (.24)**			.42 (.21)*	.43 (.21)*
Clubs involvement			.13 (.19)	.12 (.19)			.33 (.18)	.31 (.19)
School avoidance			−.78 (.22)**	−.78 (.22)**			−.75 (.19)***	−.74 (.19)***
Class unpreparedness			−.28 (.13)*	−.28 (.16)*			−.09 (.11)	−.09 (.11)
School level 2—school composition								
Size				.02 (.07)				.16 (.06)**
% FRL				−.14 (.08)				−.02 (.08)
% SPED				−.02 (.02)				−.01 (.01)
% ESL				−.01 (.01)				−.01 (.01)
Learning context								
Neighborhood crime				−.16 (.23)				.48 (.18)**
School climate				.19 (.18)				.33 (.17)
Tracking policy				.22 (.28)				.18 (.27)
School type								
Catholic				1.12 (.45)*				1.95 (.39)***
Private				1.06 (.46)*				1.88 (.59)**
School location								
Urban				.42 (.27)				.40 (.24)
Rural				−.12 (.45)				.65 (.46)
South				.44 (.49)				.33 (.25)
Midwest				.30 (.53)				.38 (.28)
Northeast				.46 (.56)				.53 (.33)

Table 4 continued

	Black				Hispanic			
	1	2	3	4	1	2	3	4
Cross-level interactions								
SES by FRL								.14 (.06)*
Model fit statistics								
Intraclass correlation coefficient	0.18	0.18	0.20	0.15	0.16	0.17	0.18	0.09
Proportion of variance explained	0.25	0.27	0.29	0.29	0.24	0.28	0.30	0.30

ˆ $p < .06$; * $p < .05$; ** $p < .01$; *** $p < .001$. Standard errors appear in parentheses below the estimated coefficient

community factors (discussed in the next section). Whether or not one's parents went to college or English was one's first language were unrelated to educational expectations for all student groups. Boys had lower expectations than girls, regardless of race or ethnicity, though the influence of student sex for Asians did not remain significant across models.

Math scores were positively associated with educational expectations for all student groups. Reading scores dropped to non-significance for Hispanics after expectations of others were added, indicating that when Hispanic students have relatively high reading scores, this raises the expectations of others, which in turn increases Hispanic student expectations. Reading scores were not significantly related to Asian student educational expectations. Student reports of their position in the general track as compared to the academic track were negatively associated with expectations for all student groups, though this became non-significant for Asian and Black students after adding specific academic experiences to the model, suggesting that it is not what track students think they are in, but the actual academic experiences they have that influence Asian and Black student expectations. However, among White and Hispanic students, believing oneself to be in the general track affects expectations above and beyond specific academic experiences. The same is true of believing oneself to be in the vocational track for Black and White students. Among the interpersonal indicators, parents' aspirations for their students' educational attainment were associated with increased educational expectations for all student groups. The importance of grades to the students' three closest friends was positively associated with educational expectations for White and Hispanic students though it became non-significant for Hispanics once academic experiences were added. Particular academic experiences may in fact explain friend choices for Hispanic students only suggesting that educational expectations are a function of experiences and not necessarily friends.

Among the indicators of academic experiences, sport participation positively affected educational expectations for Black, Hispanic, and White students while school avoidance activities negatively affected expectations for all student groups. Taking an advanced placement class, being enrolled in an English as a second language program, and participating in clubs other than sports were positively associated with educational expectations for White students only, just as being in a special education program was negatively associated with expectations only for White students. Finally, going to class unprepared was negatively associated only with the expectations of Black students. In sum, the addition of academic experiences influenced the overall composition of the student level model for minority students only. Academic experiences explained family SES and general track placement for Black students, general track placement for Asian students, and the importance of grades to friends for Hispanic students.

The total within-school variance in educational expectations explained by the student-level model as indicated by the intraclass correlation coefficient was fairly similar between student groups, 16–20% , and increased somewhat as student factors were added. The proportion of explained variance also increased as each block of variables was added and revealed that student level factors explain somewhere between 26 and 39% of the variance in educational expectations, with the greatest proportion of variance explained for White students.

Next we examine the influence of school and community factors on students' educational expectations separately by race and ethnicity. Tables 3 and 4 also present the final school-level model of educational expectations (see model 4 in each table), controlling for the student-level models for each group which are unchanged in all but one instance after adding the school-level indicators. The Hispanic student level model was the only model to change albeit slightly after the inclusion of the school level factors. Hispanic family SES became non-significant after adding the school level factors. This suggests that Hispanic family SES is explained by school composition and context; specifically, high SES Hispanic students are more likely to attend certain types of schools (e.g. smaller, Catholic or private schools with fewer students, and schools with a greater percent of FRL students) that which appear to have a positive influence on educational expectations than are low SES Hispanic students. Furthermore, an examination of cross-level interactions revealed a significant interaction between family SES and school percent FRL, indicating that as student SES increases, the negative effect of school-level SES (as measured by percent of students eligible for free lunch) reduces significantly for Hispanic students. In other words, while student body socioeconomic composition negatively influences Hispanic students' educational expectations, their own SES countervails any negative effect of overall low SES at the school level.

The percent of FRL students in a school was negatively associated with educational expectations for all students though it became non-significant for Hispanics once the learning context was controlled, and non-significant for Blacks once school type was controlled. The percent in special education was negatively associated for Black and White students though it became non-significant for Black students after learning context was added and non-significant for White students after school type was added. This suggests that administrators and school personnel at schools with positive learning climates (e.g. high morale and a focus on learning) and Catholic and private schools are able to manage their special education populations in a manner that does not have an adverse effect on the educational expectations of the greater student body. Percent of students in English as a second language program was significantly associated with educational expectations for Asian students only.

School size became significant for Hispanic and White students after school type was added suggesting that part of the positive influence of Catholic and private schools on educational expectations is due to their small size. Neighborhood crime, as reported by the school administrator, was positively associated with educational expectations for Hispanic students indicating that Hispanic students in high crime neighborhoods have higher educational expectations. School size and neighborhood crime were also associated with the educational expectations of White students. School size was positively associated with White expectations and the mean school size for White students matches the optimal school size calculated by Lee and Smith (1997). In comparison, the mean school size for Hispanics was larger than the optimal size calculated. Finally, neighborhood crime was negatively associated with White expectations and more along the lines of what would be expected.

School climate, also reported by the school administrator, was positively related to student educational expectations for Asian, Hispanic, and White students though it became non-significant for Hispanics after school type was added. The positive influence of Catholic and private schools on Hispanic students' expectations explains the

advantages of an academically oriented school climate for Hispanic students. Whether or not the school had a tracking policy was unrelated to educational expectations for all student groups, even though student reports of their perceived track placement were significant at the student level.

Students in Catholic schools had significantly higher educational expectations regardless of student race or ethnicity than students in public schools. Similarly, Black, Hispanic, and White students in private schools had significantly higher expectations than students in public schools. However, for White students only, evidence of a cross-level interaction between family SES and school type suggests that being in a Catholic or a private school had the effect of equalizing the SES/educational intention relationship. That is, the influence of SES on expectations was reduced to non-significance, suggesting that all White students in Catholic or private schools are encouraged to plan for college, regardless of their SES. The findings regarding school type support what others have found regarding the positive influence of Catholic and private schools (Bryk et al. 1993; Coleman and Hoffer 1987). Attending rural schools was negatively associated with expectations for White students only, in contrast, attending schools in the Southern and the Northeastern United States has a positive influence on White expectations. School location was not a significant factor for Asian, Black, and Hispanic student groups.

The total within-school variance as indicated by the intraclass correlation coefficient revealed between 9 and 15% of within-school variance was explained by the student and school multilevel model. In comparison to the student level model this is a 7% decrease in average of explained within-school variance, indicating that a portion of the within-school variance was actually explained by the school-level model. The proportion of explained variance for the multilevel model remained very similar, explaining somewhere between 26 and 39% of the variance in educational expectations. This does not imply that school factors did not increase the explained variance; rather, the source of explained variance switched somewhat to the school level.

Except for the fact that SES was not significantly predictive of minority student expectations once their achievement, interpersonal, experiential and school characteristics were taken into account, these HLM models for 10th graders support research available for student level effects and contribute base evidence for school level effects. These models also present evidence of the impact of academic track perceptions (though not school tracking policy) on student expectations—a factor previously speculated but not supported by data to this extent. Finally, we confirm the influence of certain academic experiences and school contexts on expectations, namely sport participation and Catholic and private school attendance.

5.2.2 Full model with interactions

Table 5 depicts the full student- and school-level model for all students with statistical interaction terms at each level to provide a more conservative statistical test of between group differences in the predictors of educational expectations. Black students are the reference group and being Asian, Hispanic or White are all entered in the model as dummy variables. The first model shown in Table 5 indicates that when all racial/ethnic groups are combined, SES, math and reading scores, parent

Table 5 Race/ethnic group comparison, full model with Blacks as reference group

	1	2	3	4
Intercept	8.93 (.07)***	8.92 (.07)***	8.71 (.05)***	8.71 (.05)***
Student level 1—demographics and achievement				
SES	0.39 (.07)***	0.39 (.07)***	0.39 (.07)***	0.40 (.07)***
Generation	0.16 (.11)	0.10 (.11)	0.11 (.11)	0.10 (.11)
Language	−0.20 (.15)	−0.20 (.14)	−0.19 (.14)	−0.18 (.14)
Male	−0.68 (.08)***	−0.82 (.09)***	−0.82 (.09)***	−0.82 (.09)***
Asian	0.03 (.20)	1.57 (.65)*	1.62 (0.64)*	1.71 (.63)**
Hispanic	−0.35 (.18)	−0.47 (.21)*	−0.53 (.22)*	−0.69 (.22)**
White	−0.68 (.08)***	−1.34 (.37)***	1.32 (.37)***	−1.35 (.37)***
Math	0.04 (.01)***	0.04 (.01)***	0.04 (.01)***	0.04 (.01)***
Reading	0.02 (.01)**	0.03 (.01)***	0.03 (.01)***	0.03 (.01)***
General track	−0.72 (.09)***	−0.70 (.09)***	−0.69 (.09)***	−0.70 (.09)***
Vocational track	−0.74 (.16)***	−0.72 (.16)***	−0.69 (.16)***	−0.68 (.17)***
Expectations of others				
Parent aspirations	0.50 (.04)***	0.45 (.05)***	0.44 (.05)***	0.45 (.05)***
Grades to friends	0.47 (.08)***	0.48 (.08)***	0.47 (.08)***	0.47 (.08)***
Academic experiences				
AP class	0.21 (.09)**	0.21 (.08)**	0.21 (.08)**	0.21 (.08)**
ESL program	0.21 (.15)	0.04 (.14)	0.11 (.14)	0.10 (.14)
Dropout program	−0.41 (.29)	−0.42 (.28)	−0.43 (.28)	−0.42 (.29)
Special Ed. program	−0.46 (.17)**	−0.41 (.17)**	−0.42 (.17)**	−0.41 (.17)**
College prep class	0.29 (.09)***	0.29 (.09)***	0.28 (.09)**	0.27 (.09)**
Sport participation	0.36 (.08)***	0.47 (.07)***	0.47 (.07)***	0.47 (.07)***
Clubs involvement	0.23 (.07)**	0.24 (.07)**	0.24 (.08)**	0.24 (.08)**
School avoidance	−0.79 (.08)***	−0.77 (.08)***	−0.77 (.08)***	−0.77 (.08)***
Class unpreparedness	−0.07 (.05)	−0.07 (.04)	−0.08 (.04)	−0.08 (.04)
Student level interactions				
Asian by male		0.53 (.20)**	0.53(.20)**	0.54 (.20)**
Asian by reading		−0.03 (.01)**	−0.03 (.01)**	−0.03 (.01)**
Asian by sport participation		−0.52 (.23)*	−0.51 (.23)*	−0.51 (.23)*
Hispanic by generation		0.39 (.20)*	0.37 (.20)^	0.42 (.20)*
White by parent aspirations		0.13 (.06)*	0.12(.06)*	0.12 (.06)*
School level 2—school composition				
Size			0.11 (.03)***	0.12 (.03)***
% FRL			−0.17 (.04)***	−0.17 (.04)***
% SPED			−0.01 (.01)	−0.01 (.01)
% ESL			−0.01 (.01)	−0.01 (.01)

Table 5 continued

	1	2	3	4
Learning context				
Neighborhood crime			0.04 (.10)	0.04 (.10)
School climate			0.35 (.09)***	0.34 (.09)***
Tracking policy			−0.06 (.13)	−0.06 (.13)
School type				
Catholic			1.13 (.20)***	1.16 (.20)***
Private			0.93 (.24)***	0.95 (.24)***
School location				
Urban			0.06 (.11)	0.06 (.11)
Rural			−0.20 (.15)	−0.20 (.15)
South			0.18 (.14)	0.19 (.14)
Midwest			−0.08 (.14)	−0.06 (.14)
Northeast			0.22 (.18)	0.23 (.18)
Cross-level interactions				
Hispanic by neighborhood crime				0.75 (.17)***
Model fit statistics				
Intraclass correlation coefficient	.17	.17	.09	.09
Proportion of variance explained	.36	.36	.36	.36

^ $p = .06$; * $p < .05$; ** $p < .01$; *** $p < .001$; Standard errors appear in parentheses below the estimated coefficient

aspirations and the importance of grades to friends, being in AP classes, and sports and club participation all predict higher educational expectations. Only Whites have significantly lower expectations than Blacks. Students in the general or vocational track have lower expectations than those in the academic track, similarly, being in a dropout program, special education program, and school avoidance activities also all predict lower expectations.

Model 2 adds student-level interaction terms that remained significant when tested together.[5] The inclusion of student-level interaction terms revealed that Hispanic students, in addition to White students, have significantly lower expectations than Black students, and Asian students have significantly higher expectations. Three predictors vary significantly between Asians and Blacks: for Asians, being male does not diminish expectations as much as it does for Blacks, whereas for Blacks there is no gender difference. In addition, reading scores and sports participation do not affect Asians' expectations like they do for Blacks. One student-level predictor varied between Hispanics and Blacks: for Hispanics, having a parent(s) with a bachelor's degree is more strongly associated with educational expectations than for Blacks. Finally, one interaction term

[5] Interaction terms between each racial/ethnic group and each student-level independent variable were tested individually, significant interaction terms were noted, and were tested as a group; those that remained significant in the final step are presented in Eq. 2.

remained significant for Whites, indicating that parent aspirations were more strongly associated with expectations for Whites than for Blacks.

In model 3, school-level factors are added, and the results indicated that across all four student groups, students in larger schools tend to have higher expectations, but the greater the percentage of students who receive free lunch, the lower the expectations. Students in schools with favorable climates have higher expectations, as do students in Catholic or Private schools compared to those in public schools. The final and full model 4 includes the one cross-level interaction that was significant, which indicates that it is only for Hispanics that neighborhoods with relatively more crime are associated with higher student expectations. The intraclass correlation coefficients and proportion of variance explained across the four equations in Table 5 are quite similar to those shown in Tables 3 and 4.

6 Discussion

Initially, we expected the educational expectations of Asian and White students to be influenced more by achievement and academic experiences and less so by social and school factors. This was based on an assumption that Asian and White students have access to more concrete information on what it takes to succeed in college from readily available college educated role models. However, significant factors related to the educational expectations of Asian and White students revealed quite different patterns of results for these two advantaged groups. For White students almost all of the factors at both the student and the school level were found to influence their educational expectations and the direction of influence of factors from both levels support current research on both expectations and attainment dynamics for Whites.

Asian students were expected to have expectations that were moderated primarily by individual level achievement and experiential academic factors. This is partially true as student level academic factors are related to Asian educational expectations, specifically, math achievement was positively associated with expectations and school avoidance activities were negatively associated. In addition, the full group comparison revealed that two student level academic experiences, reading achievement and sports participation, have no effect on expectations in comparison to Blacks. We did not anticipate that school environments would affect Asian student expectations, but judging from the model run only on Asians in Table 3, Asian expectations are negatively influenced by percent FRL and ESL students and positively affected by school climate and Catholic as opposed to public schools. In fact, school level factors affect the expectations of each student group.

For Black and Hispanic students, the two student groups who have the lowest standardized test scores, postsecondary attendance and attainment rates in the US, we expected social and school factors, rather than academic factors, to influence their educational expectations. This was based on the assumption that their relatively low success in the higher educational system is in part based on less access to information on what is required for postsecondary success. For Black students, achievement and track placement do influence their expectations, as do academic experiences that indicate low school involvement, school avoidance and class unpreparedness, and high

school involvement, sports participation. In contrast, only enrollment in a Catholic or private school increased Black students' expectations. However, none of the school factors that we know are associated with lower postsecondary attainment are associated with educational expectations for Blacks.

In the case of Hispanic students, there are two school factors predictive of educational expectations that support our hypothesis: school size and amount of neighborhood crime are both associated with higher expectations for Hispanic students. In fact, there is a cross-level interaction between being Hispanic and neighborhood crime that confirms the important role of crime in explaining the inflated expectations of Hispanic students. The tendency for Hispanic students from high crime neighborhoods to have higher expectations suggests that their expectations may be inflated due to a desire to escape their social environment. Such possibilities have been discussed by a variety of authors who suggest that the deprivation experienced in poor and dangerous neighborhoods may lead minority students to aspire educationally to escape their circumstances though these same circumstances keep students from focusing on acquiring the skills needed to pursue higher education (Kao and Tienda 1998; Mickelson 1990).

7 Limitations

This analysis evaluates factors that influence student educational expectations of 10th graders with cross-sectional data. Cross-sectional data cannot establish a causal link between associated factors and expectations as powerfully as longitudinal data could; however, the models remain useful for understanding racial/ethnic differences in educational expectations—essentially, expectations are associated with very different sources of information for each student group. As these students progress through secondary school, the predictors of their expectations may change. Ultimately, it will be important to document how their expectations are linked to their postsecondary educational experiences.

A second limitation, again owing to the fact that the data are cross-sectional, is the impossibility of testing for endogenous relationships in this analysis; that is, the possibility that variables used to predict expectations may also predict other variables in the model. For example, SES has been shown to influence achievement.

8 Conclusion

Research has shown that academic preparation and socioeconomic status account for most of the variation in eventual postsecondary degree attainment (Adelman 1999, 2006). Both of these factors influenced educational expectations for Hispanic and White students, though socioeconomic status had less of an impact on Black student expectations and no impact on Asian students. Overall, this suggests that educational expectations are based on real academic experiences and social information but not to the appropriate extent. One type of information that may help students eventually achieve their goals and overcome deficiencies in preparation is information on institutional quality as it matches the academic preparation of the student. Students whose abilities match the quality of the postsecondary institution they attend have a greater

chance of graduating (Light and Strayer 2000). Moreover, the probability of graduating with a postsecondary degree is even higher for low-ability students whose ability matched college quality (Light and Strayer 2000). Essentially, students need to have valid information on their academic skills and preparation tied to information on the advantages of starting their postsecondary educations at specific types of postsecondary institutions. For instance, the widespread growth and use of community colleges for providing remedial instruction is evidence of the higher educational systems' attempt to accommodate variation in student preparation (Adelman 1999, 2006). Community colleges have also greatly improved their focus on transfer rates in the last 10 years, especially for minority and low-SES students (Dougherty and Kienzl 2006). We do not mean to imply that students should be "tracked" into certain types of postsecondary institutions; instead, students and parents need to be given valid information on the academic qualifications of the student and presented postsecondary options which best serve their interests.

This investigation into factors that contribute to educational expectations suggests that 10th graders tend to perceive an open educational opportunity structure. In fact, the expectations of minority students reveals that their parents, friends, coaches, and communities also perceive an open educational opportunity structure as they support high educational expectations in spite of great variation in preparation and academic experiences. Evaluating student perceptions and potential moderators was just the first step towards identifying why educational expectations go unrealized. For instance, identifying that neighborhood crime had a positive influence on Hispanic students' expectations suggests that inflated educational expectations may reflect a hope to escape certain social circumstances and are not based on concrete academic or occupational goals.

In this study, disadvantaged minority students were less likely to be influenced by their social, academic, and school experiences suggesting that perceptions and not experiences are driving minority students' educational expectations. It may be that 10th graders' perceptions are protected from reality until they actually prepare to exit high school and navigate the admission process and college life. Unfortunately, the true nature of opportunity is far more stratified than many students are prepared to recognize or likely able to navigate (Adelman 2006; Karen 2002; Turley et al. 2007). We expect that future research that investigates change in educational expectations between the tenth and the 12th grades will reveal a decline in expectations and an increase in the influence of both student and school factors as students complete high school, apply to college, and make plans for their postsecondary pursuits as seniors. This may be especially true for minority students for whom few factors informed their expectations.

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