College enrollment is a key precursor to college completion, occupational attainment, and social mobility. Adolescents with high educational expectations are more likely to apply to and enroll in college than their peers with lower educational expectations (Bozick et al. 2010; Grodsky and Riegle-Crumb 2010; Morgan et al. 2013). In today’s society, most adolescents do report high educational expectations such that they expect to earn a BA or above (Goyette 2008; Jacob and Wilder Linkow 2011; Schneider and Stevenson 1999); however, there is important heterogeneity in both adolescent educational expectations and college enrollment patterns by race/ethnicity. For example, previous research based on the high school classes of 1979, 1980, and 1992 showed that at every level of socioeconomic status (SES), black and Hispanic students had higher educational expectations than their white peers (Hanson 1994; Hoffman 1987; Kao and Tienda 1998). However, data from the high school classes of 1999 and 2000 showed that although black student’s educational expectations remained higher than those of their white peers, there were no longer real differences between the educational expectations of Hispanic students and their white peers (Reynolds and Pemberton 2001). Despite findings suggesting higher net educational expectations for some students of color, we still observe lower levels of college enrollment among those who are black and Hispanic relative to their white peers. Although some scholars suggest that the effect of expectations on enrollment has declined because of the decoupling of one’s social background and one’s educational expectations as well as the saturation of high educational expectations, these same scholars and others have shown that the expectation-attainment relationship remains (Bozick et al. 2010; Goyette 2008; Jacob and Wilder Linkow 2011; Reynolds and Pemberton 2001; Reynolds et al. 2006; Schneider and Stevenson 1999).

The coexistence of high educational expectations and lower college enrollment for students of color has been dubbed the “expectation-attainment paradox.” The most recent research on the expectation-enrollment relationship by race/ethnicity used data from the high school class of 2004 (Jacob and Wilder Linkow 2011). However, it is important to continue to unravel this paradox, particularly with...
data from newer cohorts of high school students, given changing racial/ethnic demographics and changing patterns in college enrollment. For example, the gap between white and Hispanic students in total college enrollment narrowed by 10 percentage points between 2003 and 2013, while the enrollment gap between white and black students changed little. Additionally, Hispanic enrollment increased by more than 100 percent between 2003 and 2013 (Musu-Gillette et al. 2016). Although enrollment for black and white students also increased, these increases were much more modest, such that the white-black enrollment gap did not change much even between 2000 and 2017 (McFarland et al. 2019). As enrollment trends by race/ethnicity change, it is important to examine any racial/ethnic differences in educational expectations, college enrollment, and the expectation-enrollment relationship.

Different explanations have been offered as to why we may see racial/ethnic differences in the expectation-enrollment relationship. For example, students who are racial/ethnic minorities may be less likely to exhibit a consistent college-going habitus (Grodsky and Riegle-Crumb 2010), or their expectations may be more volatile throughout the life course as they may be more likely to experience socioeconomic constraints (Bozick et al. 2010; Kao and Tienda 1998). However, within these analyses there are important gaps. First, some populations have been largely understudied. Most notably, a majority of the quantitative work on racial/ethnic differences in expectations and attainment has often focused primarily on black-white differences while leaving out Hispanic students. It is especially important to include Hispanic students in these analyses, given the large and growing size of the population as well as their historically low educational attainment (Perna 2000). Finally, it is important to investigate racial/ethnic differences in the expectation-attainment relationship in a context in which high educational expectations are now the norm among adolescents.

I use data from the Education Longitudinal Study of 2002 (ELS) and the High School Longitudinal Study 2009 (HSLS) to examine racial/ethnic differences in educational expectations and enrollment in four-year college. I ask (1) which racial/ethnic groups have the highest educational expectations in each cohort, (2) whether the relationship between adolescent educational expectations and enrollment in a four-year college differs by race/ethnicity, (3) whether this relationship has changed over time, and (4) whether the overall effect of educational expectations on enrollment in a four-year college has changed over time.

**Literature Review**

**The Formation of Adolescent Educational Expectations**

Scholars have long linked social psychological factors, such as one’s own educational expectations, to educational attainment (Feliciano and Rumbaut 2005; Kao and Tienda 1998; Reynolds et al. 2006; Sewell, Hauser, and Portes 1969). However, there is some debate in the literature about the formation of educational expectations. Scholars of social stratification have used socialization models which consider educational expectations to be a function of family influence and socialization (Sewell et al. 1969) and allocation models suggesting that expectations may be reflections of one’s own understanding of the constraints they face in the attainment process, such as their own academic abilities or economic barriers (Kerckhoff 1976). Yet cultural models suggest that educational expectations may simply be reflections of the normative culture in which one is embedded (Frye 2012).

Understanding the factors associated with educational expectation formation is important for understanding racial/ethnic differences in the expectation-enrollment relationship (Perna 2000). For example, although parental influence is associated with a child’s educational expectations in socialization models, an existing body of literature shows that parents’ educational expectations are not always aligned with the students’ own educational expectations. These gaps and mismatches affect student outcomes (Marcenaró-Gutiérrez and Lopez-Agudo 2017; Wang and Benner 2014), and the effects of parental expectations on student expectations and student outcomes often differ by race/ethnicity (Cheng and Starks 2002). Additionally, parents’ expectations and children’s expectations can often influence one another. Thus, including both in the model can create issues with examining the effect of a student’s own expectations. Thus, to understand the expectation-enrollment relationship, I measure students’ own educational expectations. Financial constraints and academic ability can also affect educational expectations, per allocation models. However, black students experience a greater positive effect on college enrollment when they receive financial aid, whereas the effects of financial aid on enrollment disappear for Hispanic students once factors such as academic background are controlled (Jackson 1990). Academic ability is also associated with expectations and enrollment, but although ability is an important predictor of the number of applications white students submit, it is less important for black students (Hurtado et al. 1997). Thus, evidence suggests differential effects of the factors associated with expectations by race/ethnicity.

Although scholars of stratification are particularly concerned with the social constraints that impede attainment and reduce the likelihood of achieving mobility, sociologists of culture are concerned with how the culture in which one is embedded shapes one’s aspirations and the actions one takes to achieve those aspirations. It is important to note that expectations and aspirations, although related, are not one and the same. One’s expectations are what they expect they can achieve, while aspirations are what they would hope to be able to achieve. On the basis of ethnographic work in rural Malawi, Frye (2012) argued that one’s adolescent aspirations...
are a response to the culture in which one is embedded and a form of asserting one’s identity or moral claims about who one is. Frye suggested that adolescents may state certain aspirations not necessarily because they believe they will achieve them but as a response to the culture around them. This work was conducted on the educational aspirations of one group. I extend this concept of being influenced by the culture in which one is embedded to my work on educational expectations across multiple racial/ethnic groups.

Although models offer different explanations for understanding adolescent expectation formation, all also provide important understandings of how this may happen: social background, the influence of significant others, structural constraints, and culture. Importantly, although some previous work has suggested that there may be differences in how these expectations are formed on the basis of one’s racial/ethnic background, those analyses are based on older cohorts or qualitative data. I incorporate key aspects of each of these models to account for the different factors that play into expectation formation across race/ethnicity, as I aim to uncover whether the effect of expectations on enrollment differ.

**Trends in Educational Expectations by Race/Ethnicity**

Adolescent educational expectations have increased over time for all racial/ethnic groups from the 1970s (Reynolds and Pemberton 2001; Reynolds et al. 2006) through the most recent studies on expectations using data from the high school class of 2004 (Jacob and Wilder Linkow 2011). However, there remain important racial/ethnic differences in educational expectations, and these have varied over time. In their early and influential book *The Ambitious Generation*, Schneider and Stevenson (1999) used nationally representative data and case studies to chronicle their argument about how teens in the 1990s were much more ambitious, in terms of having higher educational expectations, than those in the 1950s, with a large majority (80 percent) expecting to attend college or graduate school. They argued that students across all racial groups were similarly likely to have either aligned or misaligned ambitions. Later, using data from the high school classes of 1979, 1980, and 1992, others found that at every level of SES, black and Hispanic students have higher educational expectations than their white peers (Hanson 1994; Hoffman 1987; Kao and Tienda 1998). Reynolds and Pemberton (2001) used data from the high school classes of 1999 and 2000 and found that adolescents indeed became more ambitious over time, such that more adolescents in the more recent cohort expected to obtain a college degree. They also showed that racial/ethnic differences in educational expectations declined such that individuals across all racial/ethnic groups were likely to have high educational expectations. However, even despite the decreases in gaps in educational expectations between white and Hispanic students, black students still report higher expectations than whites, net of family SES. Still, patterns across race/ethnicity may change over time. I use more recent data from the high school classes of 2004 and of 2013 to examine racial/ethnic differences in the expectation-enrollment relationship. This is especially important to reexamine in light of large increases in college enrollment for Hispanic students and more modest increases in enrollment for black and then white students (McFarland et al. 2019).

Scholars who have focused in more detail on understanding the mechanisms underlying racial/ethnic differences in educational expectations have demonstrated the importance of SES in this relationship (Bozick et al. 2010; Kao and Tienda 1998). SES will be an important consideration in this study given that students of color are often more likely to be of lower SES, which is consequential in the educational expectation-attainment process. For example, similar to the trends we observe with educational expectations, the educational aspirations of black and Hispanic students are often high during high school, but they are less stable over time than those of their white peers (Kao and Tienda 1998). SES is an important factor in having high and consistent aspirations, but black and Hispanic students, who are more likely to be low SES, show more unstable aspirations and are less informed about college. Consistent with prior work, Bozick et al. (2010) also showed that youth from higher SES families tend to have more stable educational expectations throughout their life courses than children from middle and lower SES families. These findings suggest long-term inequality in expectations between low- and high-SES youth. Although their study revealed important SES differentials, Bozick et al. focused less on racial differences, and Hispanic students were not included in these analyses. I expand on examining racial/ethnic differentials by including black, white, and Hispanic students with more recent, nationally representative data.

**Differentials in the Relationship between Expectations and Enrollment**

Scholars have also examined how educational expectations translate into college enrollment; however, they have done so with less attention to racial/ethnic heterogeneity in the relationship. Recent work in this area used the nationally representative ELS data and showed that high school students who state uncertain or inaccurate beliefs about the educational requirements for their expected jobs had lower rates of college entry than those who stated certain and accurate beliefs (Morgan et al. 2013). Although they provide evidence to suggest that adolescent educational and occupational beliefs and expectations are key to college enrollment, they do not further explore heterogeneity in the relationship between expectations and enrollment by race/ethnicity.
Additional work using the ELS data found that the gaps in expectations between white students and their black and Hispanic peers have decreased over time. Additionally, although expectations were still predictive of enrollment net of social and academic factors, the effects have decreased over time (Jacob and Wilder Linkow 2011). I extend these studies by specifically focusing on racial/ethnic differences in the expectation-enrollment relationship in both the ELS data and the newer HSLS data.

Other work in this area has more explicitly examined the expectation-enrollment relationship with attention to racial/ethnic heterogeneity. Grodsky and Riegle-Crumb (2010) showed that students with a college-going habitus (i.e., a long-standing assumption that they will go to college) are more likely to apply to college during their senior year of high school. However, these same students who seemingly take college enrollment for granted are often likely to be white, to be native born, and to have college-educated parents. Using Texas-based data on high school sophomores in 2002, Grodsky and Riegle-Crumb found only modest racial differences in college-going habitus, such that black and Hispanic students are less likely to have always expected to complete college. However, after controlling for factors such as social origins and preparatory commitment, one’s race/ethnicity was not strongly associated with having a college-going habitus, and students of all backgrounds did benefit from having a college-going habitus. These findings suggest similar net benefits across racial/ethnic background of having long-standing beliefs that one will complete college. Although the authors accounted for race/ethnicity, these data are not nationally representative. I elaborate on this work by using two nationally representative data sets from more recent cohorts of students.

Overall, studies have shown the clear association between educational expectations and enrollment in college. However, the few studies that examined the expectation-enrollment relationship did not strategically examine racial/ethnic differences, and those that did so did not use nationally representative data from more recent cohorts. To address changing racial/ethnic trends in college enrollment, I draw on nationally representative and more recent data.

Hypotheses

As described above, research on educational expectations has suggested changes in racial/ethnic educational expectations over time. Given work suggesting increasing expectations over time for all groups (Goyette 2008; Reynolds and Pemberton 2001; Reynolds et al. 2006; Schneider and Stevenson 1999) and closures in gaps in expectations held by white students and their black and Hispanic peers (Jacob and Wilder Linkow 2011), I hypothesize that I will find similar descriptive levels of expectations for all groups. However, results will likely differ when examining net educational expectations by race/ethnicity. Black and Hispanic students had the highest educational expectations net of SES among cohorts completing high school in 1979, 1980, and 1992 (Hanson 1994; Hoffman 1987; Kao and Tienda 1998). However, in cohorts completing high school in 1999 and 2000, there were no longer differences in educational expectations between white and Hispanic students net of family SES (Reynolds and Pemberton 2001). Additionally, recent data on enrollment in four-year colleges shows that enrollment rates have increased modestly for white and black students but substantially for Hispanic students from 2000 to 2017 (McFarland et al. 2019). I hypothesize that, using more recent nationally representative cohorts of the high school classes of 2004 and 2013, I will observe higher net educational expectations among black and Hispanic students relative to white students.

Despite expecting to observe higher net expectations among black and Hispanic students, I hypothesize that I will find that black students remain less likely to see their educational expectations translate into college enrollment, while net enrollment may look more similar between white and Hispanic students. I base this hypothesis on previous empirical work demonstrating that black and Hispanic students may be less likely to see their educational expectations translate into college enrollment (Perna 2000) and often face structural barriers such as lack of information about college (Kao and Tienda 1998; Perna 2000). However, given increases in college-going behavior in the Hispanic population coupled with decreases in enrollment for black and white students, I expect that the relationship between expectations and enrollment will look more similar between white and Hispanic students net of SES in a more recent cohort.

Data and Sample

The ELS

I use data from the restricted-use ELS and the restricted-use HSLS.1 One of the primary goals of this research is to conduct a cohort comparison. Thus, throughout the analyses, I include measures that are available for both cohorts and conduct analyses similarly for each cohort in order to optimize the ability to draw comparisons. The ELS data follow a cohort of students who were sophomores in high school in the spring of 2002. Students were interviewed again in 2004, 2006, and 2012. I examine enrollment in a four-year college within two years of high school graduation on the basis of the educational expectations held during the 10th grade year of high school. Tenth grade educational expectations are known predictors of college enrollment (Jacob and Wilder Linkow

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1In accordance with National Center for Education Statistics restricted data disclosure rules, all sample sizes for these data are rounded to the nearest 10 throughout the article and in all tables.
In tenth grade, students were asked, “As things stand now, how far in school do you think you will get?” I use this question and measure high educational expectations as expecting a BA or above, with anything less listed as the reference category. I include relevant controls from the base year, 10th grade, as they are measured concurrently with stated educational expectations and are known to be associated with both educational expectations and college enrollment. I begin with approximately 16,200 respondents. I focus on those who are non-Hispanic white, non-Hispanic black, and Hispanic, reducing the sample to approximately 12,920. I also include those who have complete data on whether they enrolled in college by 2006 (10,660) and those who provide educational expectations during their sophomore year of high school (10,660). I perform multiple imputation by chained equations (MICE) using Stata software to address missing data across the remaining covariates. MICE allows each variable to be imputed using its own imputation model, which is important given that I have continuous, ordinal, and binary variables in my model. I perform 10 imputations to stabilize my results (White, Royston, and Wood 2011). The proportion missing from 10,660 for each covariate can be found in Appendix A. In my imputation model, I include all covariates including the treatment (expectations) and the outcome (college enrollment). However, after the imputation, I drop cases without observed values on the outcome, the college enrollment by 2006 (Allison 2012; White et al., 2011), and the treatment variable of educational expectations held in 10th grade.

I measure race/ethnicity as non-Hispanic white, non-Hispanic black, and Hispanic (including those who specify and do not specify their race). I do this to investigate any changes in the expectation-enrollment paradox between white students and students of color who have been traditionally underrepresented in higher education. I also include controls for sex (binary for female/male) given the association between sex and educational attainment. I include a categorical composite measure of SES that includes information on mother’s education, father’s education, family income, mother’s occupation, and father’s occupation and is divided into quartiles. To account for prior achievement of the student, I include a math test score, standardized for ease of interpretation. To account for potential differences in stated educational expectations and actual behavior toward college-going, I include dichotomous variables for whether the student plans to take the SAT and AP exams. Additionally, educational expectations may be assertions of identity rather than actual plans that adolescents expect or intend to work toward, and assertions of identity may be a response to the culture in which one is embedded and a form of asserting one’s identity or moral claims about who one is (Frye 2012). Thus, I include controls for both peer and school culture through dichotomous measures of how important college is to respondent’s peers (not important, somewhat or very important) as well as a dichotomous measure of the percentage of students who went to four-year colleges in the graduating class immediately prior to the respondents’ Finally, to account for school-level influence, I include measures of the schools respondents attend: urban or nonurban, located in the South or another region, and public, private, or Catholic.

My outcome measure is whether the respondent enrolled in any type of four-year college within two years of high school graduation, 2006. To construct this measure, I use data from the ELS F3 (third follow-up) institutional file, which contains information on any postsecondary school associated with the student through 2012. I use these data as they allow me to examine all institutions on file for the student through the end of the 2006 calendar year, whereas in the second follow-up institutional file, some students are interviewed as early as January 2006, meaning that I may miss students who enrolled in four-year colleges during fall 2006. Thus, I construct the variable to include all who participated in the F3 interview. Respondents are then coded as enrolling in four-year colleges if they had enrolled in any type of four-year college by the 2006 calendar year.

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2Additionally, the other data option for measuring educational expectations is taken during the spring of 12th grade. At this point, students may already know their post–high school plans and factor them in to their 12th grade educational expectation response. Thus, I use educational expectations from the spring of 10th grade.

3I use this cut point on the basis of literature suggesting that most adolescents today expect to complete a four-year degree. I also use it to be consistent with previous literature that has examined educational expectations at this cut point.

4In additional analyses, I include Asian students. Although Asian students have the highest educational expectations and highest college enrollment rates, their small sample sizes in both the ELS and HSLS do not allow enough statistical power to render their interactions or comparisons against the interactions of other racial/ethnic groups significant.

5Results are robust when imputing the treatment, but as it is the primary measure of interest, I include the model where I do not impute the treatment.

6Results were similar using separate measures of parents’ education and income. The SES composite includes more information and is consistent with previous literature on this point.

7In an attempt to keep my analyses for the ELS and HSLS as parallel as possible, I do not include the corresponding reading standardized test score, as it is not available in the HSLS data. However, results in the ELS analysis were robust when using both the math and reading scores or only the math score.

8This outcome variable was coded many different ways to conduct sensitivity analyses: those who enrolled in any four-year college by 2006, not-for-profit four-year colleges by 2006, and for-profit four-year colleges by 2006. Results did not differ when removing subsamples that enrolled in for-profit or not-for-profit four-year colleges. Thus, I use the outcome measure that includes more respondents: enrolled in any four-year college.
The HSLS

I also use data from the HSLS restricted data file. The HSLS is a nationally representative data set that follows a group of approximately 25,200 students who were 9th graders in 2009. They were interviewed again in 2012, 2013, and 2016. These data are ideal to use for this study, as they include many of the same questions that are asked in the ELS data set. The ELS and HSLS high school graduation dates are also about a decade apart: 2004 and 2013, respectively. This allows a sufficient time frame to examine any changes in the expectation-enrollment relationship over time. I aim to make the HSLS analysis as parallel to the ELS analysis as possible in order to optimize comparison. Thus, I also focus on enrollment in a four-year college within two years of high school graduation, 2015, on the basis of the educational expectations held during high school. The HSLS uses the same wording as the ELS to ask about educational expectations, and I dichotomize high educational expectations in the same manner. However, the question was asked in fall 2009, when students were freshmen, and again in spring 2012, when the students were in 11th grade. I measure educational expectations from the spring of 11th grade, which allows me to capture HSLS respondents at a time when they would be more developmentally similar to the ELS respondents who were asked about expectations during the spring of 10th grade. I include relevant controls from the base year known to be associated with educational expectations and enrollment in college. I restrict my sample to respondents who are non-Hispanic white, non-Hispanic black, and Hispanic, reducing the sample to 18,910. I also include only those who had data on college enrollment by 2015 (13,530) and provided educational expectations during 11th grade (12,540). As done with the ELS cohort, I use MICE to address missing data on the additional covariates in the model. The proportion missing from 12,540 for these covariates can be found in Appendix A. I also perform 10 imputations and include all covariates in the imputation model. I then drop those without observed data on race, the outcome of college enrollment by 2015, and the treatment variable of educational expectations.

In the interest of keeping the ELS and HSLS analyses as parallel as possible, I measure HSLS covariates in the same way I measure them in the ELS analysis wherever possible. Race/ethnicity is trichotomized as non-Hispanic white, non-Hispanic black, and Hispanic (including those who specify and do not specify their race), and sex is binary (female and male). SES is again measured from the composite measure of SES that includes information on mother’s education, father’s education, family income, mother’s occupation, and father’s occupation. However, in the HSLS, the SES composite is measured in quintiles as opposed to quartiles. I measure prior achievement again from the base year (9th grade) standardized math test score. To measure behavior toward college-going, I again include measures of the SAT and AP exams. The SAT measure for whether the student took or plans to take the SAT is taken from the same question as that used in the ELS analysis, but it is measured from 9th grade as opposed to 10th grade as in the ELS. For the AP exam measure, I create a dichotomous measure from the junior-year question for whether the student has taken one or more AP exams. I again include controls for both peer and school culture through dichotomous measures of how many friends plan to attend four-year colleges. The question is the same but is taken from 11th grade. I also include a parallel measure of the school culture for percentage of how many students in the graduating class ahead of our cohort went to four-year colleges. Although in the ELS this measure is taken from the senior class immediately prior to the respondents’, in HSLS this information is only available for the class of 2009, who were seniors when the respondents were freshmen. I also include parallel measures of school urban or nonurban, school region, and whether the school is public, private, or Catholic.

The outcome measure is whether the respondent enrolled in any type of four-year college within two years of high school graduation. To construct this measure, I use data from the HSLS 2016 F3 file, which contains information on any college associated with the student through 2016. I use these data from F3 (2016) because they allow me to see all institutions on file through the full 2015 calendar year. Thus, when creating the outcome measure I include all who participated in the F3 interview. Respondents are then coded as enrolling in four-year colleges if they enrolled in four-year colleges by the end of the 2015 calendar year.

Analytic Strategy

To begin, I conduct a descriptive analysis of the educational expectations and enrollment trends in the three racial/ethnic groups of interest in this study: non-Hispanic white, non-Hispanic black, and Hispanic students. In these analyses, I examine the percentages within each racial/ethnic group with high educational expectations (expects a BA or above), the percentage who enroll in any four-year college within two years of high school graduation, and those with high expectations.

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9I use the restricted data file here because the institutional file needed to create the outcome variable is available only in the restricted file for the HSLS data. Given the restricted nature of the data set, all sample sizes must be rounded to the nearest 10 in accordance with National Center for Education Statistics restricted data policies.

10In Appendices B and C, I show that results would have been similar if using HSLS 9th grade expectations as opposed to 11th grade expectations.

11This outcome, similar to the ELS outcome variable, was also coded many different ways, including those who enrolled in any four-year college by 2015 and only not-for-profit four-year colleges. Results were robust, so I use the one of enrolled in any four-year college by 2015, as it includes more respondents.
educational expectations who enroll in four-year colleges.\textsuperscript{12} I
do this for both the ELS and HSLS cohorts to describe the
 descriptive trends across two time points. I also examine
which groups have the highest educational expectations, net
 of SES, in each cohort.

For the second part of the analysis, I aim to answer
whether the relationship between educational expectations
and enrollment in a four-year college differs by race/ethnic-
ity. I begin the analysis by examining results from the ELS
cohort. Using logistic regression, I regress enrollment in a
four-year college by 2006 on the main effects for race/ethnic-
ity (black and Hispanic, with white as the reference category)
and high educational expectations (expects BA or above).
Next, I include interactions for educational expectations by
race/ethnicity to examine whether the effects of expectations
on enrollment differ by race/ethnicity, without relevant con-
trols. I proceed by using nested models to add in controls for
family background, prior achievement, peer and school cul-
ture, and finally school characteristics. In the fully specified
model, I examine the effects of expectations on enrollment,
by race/ethnicity, net of relevant controls.

In these analyses, I examine both nonlinear effects and
interactions, as I believe that the effect of dichotomous edu-
cational expectations on whether one enrolls in a four-year
college differs by one’s racial/ethnic background. Thus, I use
best practices for both estimating and interpreting nonlinear
interactions (Mize 2019). I do not use the coefficient of the
interaction term to interpret the interaction effect. Rather, I
use predicted probabilities of enrolling in a four-year college
as the natural metric to interpret the magnitude of the interac-
tion effect. I then calculate the average marginal effect
(AME) of having high educational expectations on enrolling
in a four-year college for each racial/ethnic group. I estimate
the AME in two ways: (1) by calculating the marginal effect
(in predicted probability) of having high educational expec-
tations on enrolling in a four-year college for all observations
in the sample that are white, black, or Hispanic and (2) by
averaging these effects by the subsample of interest (e.g.,
white, black, Hispanic). The former allows each group to
have the same covariate distribution, and the latter results
can sometimes be influenced by the differing covariate dis-
tributions of the subgroups. I provide both to confirm results.
Next, I calculate the second difference. The second dif-
cernce is a test of whether the AME for one group is the same
as the AME for a different group. I subtract the AME of each
group from each other group to get the difference in the AME
for each group relative to other groups. The test of second
difference allows us to see whether the AME of one group is
statistically different from the AME of another group, and
this confirms whether the interaction effect exists.

For the third part of the analysis, I examine whether the
relationship between educational expectations and enrollment
in a four-year college by race/ethnicity has changed over
time. To do so, I repeat the analysis carried out on the ELS
data using the HSLS data. I perform the nested logistic regres-
sions followed by calculating predicted probabilities and
AMEs for each racial/ethnic group. I then conduct tests of
second differences in which I compare the AME of expecta-
tions on enrollment for each group to examine which interac-
tions are significant. If any of the interactions are revealed to
be significant, I then compare the magnitudes of the second
differences in those predicted probabilities in the HSLS and
the ELS to determine if gaps in the effects of educational
expectations on enrollment by race/ethnicity have increased
or decreased over time by comparing the size of the gaps.

In the fourth part of the analysis, I examine whether the
net effect of educational expectations on enrollment in a
four-year college has changed over time. To do so, I include
relevant controls for family background, prior achievement,
school and peer culture, and school characteristics. I com-
pare the coefficient for educational expectations in the ELS
model and in the HSLS model.

Results

Descriptive Statistics

In Table 1, I present descriptive statistics of variable means
by level of educational expectations for the ELS sample. These
means are consistent with the literature on educational
expectations, and most differences are significant at \( p < .05 \).
Those with higher educational expectations are more likely
to be white and of higher SES, to have higher prior achieve-
ment, to take more actions toward college-going, and to have
peers and schools for which college-going is more likely to
be expressed through both stated preferences and peer behav-
ior. Those who have higher educational expectations also
have higher means for enrollment in a four-year college by
2006. In Table 2, I present the variables means for the HSLS
sample. The same patterns hold true in for the HSLS cohort
of 2013 high school seniors. One notable difference between
the ELS and HSLS cohorts is that there are many more
Hispanic students in the HSLS sample.

Trends in Educational Expectations and
Enrollment

In Table 3, I further explore the trends in racial/ethnic differ-
ces in educational expectations and enrollment in a four-
year college for both the ELS and HSLS cohorts. Largely,
both cohorts follow similar raw patterns in these relation-
ships. For example, white students are the most likely to
express high educational expectations, while Hispanic stu-
dents are the least likely to express high educational expecta-
tions. Importantly, the percentage of students in each racial/
ethnic group who express high educational expectations is
still high, but it has slightly decreased over time for all racial/

\textsuperscript{12}The descriptive analyses for the ELS and HSLS are all weighted
by their respective panel weights.
For college enrollment trends, Hispanic students remain the least likely to enroll in a four-year college within two years of high school graduation in both cohorts. I next present the percentage of students with high expectations who enroll in four-year colleges, by race/ethnicity. The overall rates of enrollment in a four-year college within two years of high school graduation have increased from 61 percent to 65 percent. The increases are most pronounced for Hispanic students in the decade time span between the ELS and HSLS data collection, as they have risen from 39 percent to 51 percent. The increases for white and black students are more modest. This descriptive result is consistent with reports that although white and black students have experienced modest

Table 1. Descriptive Statistics of Student Characteristics and Enrollment Outcome, ELS Restricted-Use Data.

|                                | Full Sample |          | Prop. Missing |          | Low Expectations |          | High Expectations |          |
|--------------------------------|-------------|----------|---------------|----------|------------------|----------|-------------------|----------|
|                                |             | Mean     | SD            | Mean     | SD               | Mean     | SD                | Mean     |
| Sociodemographic factors       |             |          |               |          |                  |          |                   |          |
| Female (binary, 0/1)           | .53         | .00      | .44           | .56      |                  |          |                   |          |
| Race                           |             |          |               |          |                  |          |                   |          |
| White (binary, 0/1)            | .68         | .00      | .63           | .70      |                  |          |                   |          |
| Black (binary, 0/1)            | .15         | .00      | .15           | .15      |                  |          |                   |          |
| Hispanic (binary, 0/1)         | .16         | .00      | .22           | .14      |                  |          |                   |          |
| Family background factors      |             |          |               |          |                  |          |                   |          |
| Socioeconomic status           |             |          |               |          |                  |          |                   |          |
| Quartile 1                     | .23         | .00      | .35           | .19      |                  |          |                   |          |
| Quartile 2                     | .25         | .00      | .32           | .22      |                  |          |                   |          |
| Quartile 3                     | .25         | .00      | .21           | .27      |                  |          |                   |          |
| Quartile 4                     | .27         | .00      | .12           | .33      |                  |          |                   |          |
| Lives with “other” than both parents (binary, 0/1) | .41 | .00 | .49 | .39 | | | |
| Student prior achievement      |             |          |               |          |                  |          |                   |          |
| Math test score (continuous, −2.14, 2.60) | .03 | 1.01 | .00 | −.55 | .91 | .24 | .96 |
| SAT (binary, 0/1)              | .70         | 9,670    | .09           | .40      | .81              |          |                   |          |
| AP tests (binary, 0/1)         | .37         | 9,630    | .10           | .18      | .44              |          |                   |          |
| School/peer culture            |             |          |               |          |                  |          |                   |          |
| Most friends plan to attend college (binary, 0/1) | .57 | 7,470 | .30 | .36 | .64 | | |
| ≥50% of prior senior class attended four-year college (binary, 0/1) | .51 | 7,760 | .27 | .39 | .54 | | |
| School factors                 |             |          |               |          |                  |          |                   |          |
| School in urban area (binary, 0/1) | .30 | .00 | .27 | .30 | | | |
| School in South (binary, 0/1)  | .36         | .00      | .34           | .36      |                  |          |                   |          |
| School type                    |             |          |               |          |                  |          |                   |          |
| Private                        | .03         | .00      | .02           | .04      |                  |          |                   |          |
| Public                         | .92         | .00      | .96           | .90      |                  |          |                   |          |
| Catholic                       | .05         | .00      | .02           | .06      |                  |          |                   |          |
| Outcome                        |             |          |               |          |                  |          |                   |          |
| Enrolled in four-year college by 2006 (binary, 0/1) | .49 | .00 | .18 | .61 | | | |
| Weighted sample proportion     | 1.00        |          | 27.00         |          | 73.00            |          |                   |          |

Source: Data are from the National Center for Education Statistics Education Longitudinal Study of 2002 (ELS) restricted-use data.

Note: The sample is restricted to those who are nonmissing on race, college enrollment, and educational expectations. Educational expectations are measured from spring of 10th grade. Descriptive statistics are weighted by the ELS panel weight. All sample sizes are rounded to the nearest 10 in accordance with National Center for Education Statistics restricted data use policies.
increases in college enrollment, Hispanic students have experienced more substantial increase in enrollment. Still, despite the enrollment strides made by Hispanic students and the decreases experienced by white and black students, Hispanic students still have the lowest educational expectations and enrollment rates in the more recent HSLS data.

**Highest Educational Expectations, Net of SES**

Previous work on the high school classes of 1979, 1980, and 1992 suggests that at every level of SES, black and Hispanic students have higher educational expectations than their white peers (Hanson 1994; Hoffman 1987; Kao and Tienda 1998). However, research using more recent data on the high school classes of 1999 and 2000 shows that net of SES, there are no longer differences in educational expectations between white and Hispanic students. Rather, black students maintain higher net educational expectations than white students (Reynolds and Pemberton 2001). Table 4 shows that these patterns remain similar in the ELS cohort and the HSLS cohort: net of SES, black students have higher educational expectations than white students, and for the more recent HSLS cohort, there are no net expectation differences between white and Hispanic students.

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**Table 2. Descriptive Statistics of Student Characteristics and Enrollment Outcome, HSLS Restricted-Use Data.**

|                      | Full Sample |          |          |          |          |          |
|----------------------|-------------|----------|----------|----------|----------|----------|
|                      | Mean        | SD       | n if Different from 12,540 | Proportion Missing from 12,540 | Low Expectations | Mean        | SD       | High Expectations | Mean        | SD       |
| Sociodemographic factors |             |          |                |                     |            |          |                |              |          |
| Female (binary, 0/1)  | .52         | .48      | .55         | .48      | .55      | .48      | .55      | .48      | .55      | .48      | .55      |
| Race                 |             |          |                |                     |            |          |                |              |          |
| White (binary, 0/1)  | .61         | .53      | .65         | .53      | .65      | .53      | .65      | .53      | .65      | .53      | .65      |
| Black (binary, 0/1)  | .15         | .15      | .15         | .15      | .15      | .15      | .15      | .15      | .15      | .15      | .15      |
| Hispanic (binary, 0/1)| .25         | .32      | .20         | .32      | .20      | .32      | .20      | .32      | .20      | .32      | .20      |
| Family background factors |          |          |                |                     |            |          |                |              |          |
| Socioeconomic status |             |          |                |                     |            |          |                |              |          |
| Quintile 1           | .19         | 12,160   | .03          | .29      | .14      | .29      | .14      | .29      | .14      | .29      | .14      |
| Quintile 2           | .19         | 12,160   | .03          | .25      | .15      | .25      | .15      | .25      | .15      | .25      | .15      |
| Quintile 3           | .19         | 12,160   | .03          | .22      | .18      | .22      | .18      | .22      | .18      | .22      | .18      |
| Quintile 4           | .20         | 12,160   | .03          | .16      | .23      | .16      | .23      | .16      | .23      | .16      | .23      |
| Quintile 5           | .23         | 12,160   | .03          | .09      | .30      | .09      | .30      | .09      | .30      | .09      | .30      |
| Parents not married (binary, 0/1) | .26         | 10,040   | .20          | .32      | .23      | .32      | .23      | .32      | .23      | .32      | .23      |
| Student prior achievement |          |          |                |                     |            |          |                |              |          |
| Math test score (continuous, −1.96, 2.6) | .08         | .98      | 12,050      | .04      | .37      | .89      | .33      | .95      | .33      | .95      | .33      | .95      |
| Took SAT (binary, 0/1) | .64         | 11,650   | .07          | .47      | .73      | .47      | .73      | .47      | .73      | .47      | .73      | .47      | .73      |
| Took AP tests (binary, 0/1) | .21         | 12,280   | .02          | .13      | .26      | .13      | .26      | .13      | .26      | .13      | .26      | .13      | .26      |
| School/peer culture |             |          |                |                     |            |          |                |              |          |
| Most friends plan to attend college (binary, 0/1) | .49         | 12,410   | .01          | .28      | .61      | .28      | .61      | .28      | .61      | .28      | .61      | .28      | .61      |
| ≥50% of senior class of 2009 attended four-year college (binary, 0/1) | .47         | 9,670    | .23          | .38      | .52      | .38      | .52      | .38      | .52      | .38      | .52      | .38      | .52      |
| School factors |             |          |                |                     |            |          |                |              |          |
| School in urban area (binary, 0/1) | .31         | .33      | .30         | .33      | .30      | .33      | .30      | .33      | .30      | .33      | .30      | .33      | .30      |
| School in South (binary, 0/1) | .38         | .37      | .39         | .37      | .39      | .37      | .39      | .37      | .39      | .37      | .39      | .37      | .39      |
| School type |             |          |                |                     |            |          |                |              |          |
| Private | .04         | .02      | .05         | .02      | .05      | .02      | .05      | .02      | .05      | .02      | .05      | .02      | .05      |
| Public | .92         | .96      | .90         | .96      | .90      | .96      | .90      | .96      | .90      | .96      | .90      | .96      | .90      |
| Catholic | .04         | .02      | .05         | .02      | .05      | .02      | .05      | .02      | .05      | .02      | .05      | .02      | .05      |
| Outcome |             |          |                |                     |            |          |                |              |          |
| Enrolled in four-year college by 2015 (binary, 0/1) | .48         | .19      | .65         | .19      | .65      | .19      | .65      | .19      | .65      | .19      | .65      | .19      | .65      |
| Weighted sample proportion | 1.00       | .36      | .64         | .36      | .64      | .36      | .64      | .36      | .64      | .36      | .64      | .36      | .64      |
| n | 12,540      | 4,210    | 8,330      | 4,210    | 8,330    | 4,210    | 8,330    | 4,210    | 8,330    | 4,210    | 8,330    | 4,210    | 8,330    |

Source: Data are from the National Center for Education Statistics High School Longitudinal Study of 2009 (HSLS) restricted-use data.

Note: The sample is restricted to those who are nonmissing on race, college enrollment, and educational expectations. Educational expectations are measured from the spring of 11th grade. Descriptive statistics are weighted by the HSLS panel weight. All sample sizes are rounded to the nearest 10 in accordance with National Center for Education Statistics restricted data use policies.
### Table 3. Percentage of Students within Racial/Ethnic Group Expecting a BA, Enrolling in Four-Year Colleges within Two Years of High School Graduation, and Expecting and Enrolling, ELS and HSLS Restricted-Use Data.

|                          | White | Black | Hispanic | Total | n    |
|--------------------------|-------|-------|----------|-------|------|
| Percentage with high expectations | ELS   | 75    | 73       | 64    | 73   | 10,660 |
|                          | HSLS  | 69    | 64       | 54    | 64   | 12,540 |
| Percentage enrolled in four-year colleges | ELS   | 56    | 42       | 29    | 49   | 10,660 |
|                          | HSLS  | 56    | 40       | 33    | 48   | 12,540 |
| Percentage with high expectations who enrolled in four-year colleges | ELS   | 67    | 50       | 39    | 61   | 10,660 |
|                          | HSLS  | 71    | 56       | 51    | 65   | 12,540 |

Sources: Data are from the National Center for Education Statistics (NCES) Education Longitudinal Study of 2002 (ELS) restricted-use data and the NCES High School Longitudinal Study of 2009 (HSLS) restricted-use data.

Note: Data are weighted by their respective panel weights. Sample sizes are rounded to the nearest 10 in accordance with NCES restricted data use policies.

### Table 4. Odds Ratios of High Educational Expectations on Race/Ethnicity and SES, ELS and HSLS Restricted-Use Data.

|                | ELS Model 1 | ELS Model 2 | HSLS Model 1 | HSLS Model 2 |
|----------------|-------------|-------------|--------------|--------------|
| Black          | .798***     | 1.153*      | .898         | 1.252***     |
|                | (.050)      | (.077)      | (.052)       | (.076)       |
| Hispanic       | .567***     | .874*       | .622***      | 1.012        |
|                | (.033)      | (.055)      | (.029)       | (.053)       |
| White (reference) |            |             |              |              |
| SES            |             |             |              |              |
| Second quartile| 1.372***    | 1.419***    |              |              |
|                | (.084)      | (.092)      |              |              |
| Third quartile | 2.737***    | 1.943***    |              |              |
|                | (.182)      | (.125)      |              |              |
| Fourth quartile| 5.841***    | 3.227***    |              |              |
|                | (.432)      | (.216)      |              |              |
| Fifth quartile |             |             | 7.658***     |              |
|                |             |             | (.541)       |              |
| First quartile (reference) |    |             |              |              |
| n              | 10,660      | 10,660      | 12,540       | 12,540       |

Sources: Data are from the National Center for Education Statistics (NCES) Education Longitudinal Study of 2002 (ELS) restricted-use data and the NCES High School Longitudinal Study of 2009 (HSLS) restricted-use data.

Note: Data are multiply imputed. Sample sizes are rounded to the nearest 10 in accordance with NCES restricted data use policies. SES = socioeconomic status.

* p < .05. *** p < .001.

**Effects of Educational Expectations on Enrollment by Race/Ethnicity**

I next examine whether the effect of high educational expectations on enrollment in a four-year college differs by race/ethnicity in the ELS cohort. Table 5 shows the results for the logistic regression of enrollment in a four-year college by 2006 using the ELS data from the high school class of 2004. First, I examine the main effects of race/ethnicity and educational expectations. Overall, I find that the net of others, the effect of 10th grade educational expectations on enrollment in a four-year college within two years of high school graduation remains high, and black students have higher odds of enrollment than their white and Hispanic peers. Model 1 shows the main effects for race/ethnicity and educational expectations. Net of expectations, black and Hispanic students are less likely to enroll in a four-year college within two years of high school graduation, such that the odds of enrollment are reduced by 45 percent for black students and 64 percent for Hispanic students relative to white students. In model 2 I include interactions, and in model 3 I include controls for family background. Across the models, we begin to see that net of all other factors, black students are more likely to enroll in a four-year college than their white peers. By model 4, net of all controls for family background, prior achievement, students’ actions toward college-going, peers’ actions and school culture, and school characteristics, there is no difference in enrollment in a four-year college within two years of high school graduation between Hispanic and white students. Additionally, the effect of high educational
| Table 5. Odds Ratios of College Enrollment by 2006 on Student Characteristics, ELS Restricted-Use Data, 2002. |
|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Main Effects                               | Model 1                                      | Model 2                                      | Model 3                                      | Model 4                                      |
| Black                                       | .556***                                      | .96                                          | 1.429*                                       | 2.316***                                    |
|                                             | (.033)                                       | (.127)                                       | (.200)                                       | (.357)                                       |
| Hispanic                                    | .367***                                      | .531***                                      | .747*                                        | 1.024                                        |
| White (reference)                           | (.022)                                       | (.072)                                       | (.106)                                       | (.159)                                       |
| Expect BA                                   | 7.174***                                     | 8.499***                                     | 5.988***                                     | 2.859***                                     |
|                                             | (.390)                                       | (.560)                                       | (.419)                                       | (.230)                                       |
| Interactions                                |                                              |                                              |                                              |                                              |
| Student black × expects BA                  | .511***                                      | .611**                                       | .647**                                       |                                              |
|                                             | (.075)                                       | (.095)                                       | (.108)                                       |                                              |
| Student Hispanic × expects BA               | .635**                                       | .731*                                        | .74*                                         |                                              |
|                                             | (.096)                                       | (.116)                                       | (.127)                                       |                                              |
| Sex                                          |                                              |                                              |                                              |                                              |
| Female                                       |                                              |                                              | 1.228***                                     | 1.372***                                     |
|                                             |                                              |                                              | (.057)                                       | (.072)                                       |
| Family background                           |                                              |                                              |                                              |                                              |
| SES                                          |                                              |                                              |                                              |                                              |
| Second quintile                             | 1.513***                                     | 1.173*                                       |                                              |                                              |
|                                             | (.103)                                       | (.087)                                       |                                              |                                              |
| Third quintile                              | 2.799***                                     | 1.723***                                     |                                              |                                              |
|                                             | (.189)                                       | (.129)                                       |                                              |                                              |
| Fourth quintile                             | 7.434***                                     | 3.219***                                     |                                              |                                              |
| First quintile (reference)                  | (.535)                                       | (.262)                                       |                                              |                                              |
| Parents unmarried                           | .617***                                     | .686**                                       |                                              |                                              |
|                                             | (.030)                                       | (.037)                                       |                                              |                                              |
| Student prior achievement                   |                                              |                                              |                                              |                                              |
| Math test score composite                   |                                              |                                              | 2.281***                                     |                                              |
|                                             |                                              |                                              | (.074)                                       |                                              |
| Student actions toward college-going         |                                              |                                              |                                              |                                              |
| SAT                                          |                                              |                                              | 2.067***                                     |                                              |
|                                             |                                              |                                              | (.137)                                       |                                              |
| AP test                                     |                                              |                                              | 1.362***                                     |                                              |
|                                             |                                              |                                              | (.080)                                       |                                              |
| Peers’ actions/school culture               |                                              |                                              |                                              |                                              |
| Most friends plan to attend college         |                                              |                                              | 1.370***                                     |                                              |
|                                             |                                              |                                              | (.097)                                       |                                              |
| ≥50% of peers attended college             |                                              |                                              | 1.631***                                     |                                              |
|                                             |                                              |                                              | (.113)                                       |                                              |
| School characteristics                      |                                              |                                              |                                              |                                              |
| School in urban area                        |                                              |                                              | 1.245***                                     |                                              |
|                                             |                                              |                                              | (.074)                                       |                                              |
| School in South                             |                                              |                                              | 1.023                                        |                                              |
|                                             |                                              |                                              | (.054)                                       |                                              |
| Public high school                          |                                              |                                              | .632***                                      |                                              |
|                                             |                                              |                                              | (.063)                                       |                                              |
| Catholic high school                        |                                              |                                              | 1.282*                                       |                                              |
| Private high school (reference)             |                                              |                                              | (.152)                                       |                                              |
| n                                           | 10,660                                       | 10,660                                       | 10,660                                       | 10,660                                       |

Source: Data are from the National Center for Education Statistics Education Longitudinal Study of 2002 (ELS) restricted-use data.

Note: The sample is restricted to those who are nonmissing on race, college enrollment, and educational expectations. Data are multiply imputed. All sample sizes are rounded to the nearest 10 in accordance with National Center for Education Statistics restricted data use policies. SES = socioeconomic status.

*p < .10. *p < .05. **p < .01. ***p < .001.
expectations on enrollment decreases across the models but remains large such that in the fully specified model having high educational expectations increases the odds of enrolling in a four-year college by about three times relative to having low educational expectations. This reveals a large net effect of high educational expectations on enrollment in a four-year college in the ELS cohort.

In models 2 and 4 of Table 5, I examine the interactions between educational expectations and race/ethnicity to assess whether the effect of educational expectations on enrollment differs by race/ethnicity. I find that the effects of expectations on enrollment do differ by race/ethnicity, such that the effect of high expectations on enrollment is lower for those who are black and Hispanic. Model 2 includes the main effects for race/ethnicity, educational expectations, and the race/ethnicity and expectations interactions. It reveals that the effect of expectations on enrollment is positive for all racial/ethnic groups, as evidenced by the high and positive main effect of educational expectations, but it is reduced for black and Hispanic students, as evidenced by significant coefficients less than 1. In model 4, the fully specified model, the interactions appear to remain significant, such that the effect of expectations on enrollment is positive for all students, but it is reduced for black students with and marginally reduced for Hispanic students ($\alpha = .08$).

For proper interpretation of these interaction effects, I present predicted probabilities of the fully specified model in Table 6. I present results that are calculated both by subsample and for all observations. Results are similar and show that net of socioeconomic, academic, and school characteristics, the effect of high educational expectations on enrollment in a four-year college is positive for all groups, but the AME is smaller for black and Hispanic students. I discuss the results calculated for all observations. The AME of high expectations on enrollment is largest for white students (.169) and lower for black (.098) and Hispanic (.120) students. Thus, black and Hispanic students receive less of an increase than white students on their predicted probability of enrolling in a four-year college within two years of high school graduation when they have high educational expectations as opposed to low educational expectations. The tests of second difference and contrasts columns reveal that the AME for white students is significantly different from the AME for black and Hispanic students. This confirms that the effect of expectations on enrollment for black and Hispanic students is significantly different from and lower than that of white students and the interactions are significant.

### The Expectation-Enrollment Relationship over Time

In Table 7, I examine the effect of educational expectations on enrollment in a four-year college by race/ethnicity using the HSLS data. The fully specified model 4 reveals that net of controls for family background, prior achievement, actions toward college-going, peer and school culture, and school characteristics, the effect of educational expectations on enrollment in a four-year college within two years of high school graduation remains positive for all groups (as shown by the high coefficient on expectations), and the effects do not appear differ by race/ethnicity, as evidenced by nonsignificant interactions. I first examine the main effects for race/ethnicity and educational expectations. In Table 7, model 1, net of expectations, black and Hispanic students are less likely to enroll in college than their white peers, such that the
Table 7. Odds Ratios of College Enrollment by 2015 on Student Characteristics, HSLS Restricted-Use Data, 2009.

| Main Effects                | Model 1       | Model 2       | Model 3       | Model 4       |
|-----------------------------|---------------|---------------|---------------|---------------|
| Black                       | .594***       | .808          | 1.072         | 1.195         |
|                             | (.035)        | (.091)        | (.129)        | (.154)        |
| Hispanic                    | .531***       | .632***       | 1.009         | .959          |
| White (reference)           | (.027)        | (.059)        | (.100)        | (.102)        |
| Expect BA                   | 7.170***      | 7.932***      | 5.724***      | 3.442***      |
|                             | (.315)        | (.424)        | (.325)        | (.217)        |
| Interactions                |               |               |               |               |
| Student black × expects BA  |               |               |               |               |
|                             | .658**        | .732*         |               | .842          |
|                             | (.087)        | (.102)        |               | (.127)        |
| Student Hispanic × expects BA|               |               |               |               |
|                             | .779*         | .807          |               | .887          |
|                             | (.087)        | (.095)        |               | (.113)        |
| Sex                         |               |               |               |               |
| Female                      | 1.325****     | 1.363***      |               |               |
|                             | (.057)        | (.064)        |               |               |
| Family background           |               |               |               |               |
| SES                         |               |               |               |               |
| Second quartile             | 1.557***      | 1.355***      |               |               |
|                             | (.121)        | (.114)        |               |               |
| Third quartile              | 2.161***      | 1.555***      |               |               |
|                             | (.166)        | (.129)        |               |               |
| Fourth quartile             | 3.475***      | 1.903***      |               |               |
|                             | (.268)        | (.161)        |               |               |
| Fifth quartile              | 9.610***      | 3.589***      |               |               |
|                             | (.787)        | (.325)        |               |               |
| First quartile (reference)  |               |               |               |               |
| Parents unmarried           | .870*         | .887          |               |               |
|                             | (.051)        |               |               |               |
| Parents married (reference) |               |               |               |               |
| Student prior achievement   |               |               |               |               |
| Math test score composite   | 1.979***      | (1.058)       |               |               |
|                             |               |               |               |               |
| Student actions toward college-going |           |               |               |               |
| SAT                         | 1.431***      | (1.073)       |               |               |
|                             |               |               |               |               |
| AP test                     | 1.359***      | (1.082)       |               |               |
|                             |               |               |               |               |
| Peers actions/school culture|               |               |               |               |
| Most friends plan to attend college | 2.059***     | (1.099)       |               |               |
|                             |               |               |               |               |
| ≥50% of peers attended college | 1.452***     | (1.078)       |               |               |
|                             |               |               |               |               |
| School characteristics      |               |               |               |               |
| School in urban area        | .908          | (1.050)       |               |               |
|                             |               |               |               |               |
| School in South             | .995          | (1.047)       |               |               |
|                             |               |               |               |               |
| Public high school          | .454***       | (1.047)       |               |               |
|                             |               |               |               |               |
| Catholic high school        | 1.361*        | (1.171)       |               |               |
| Private high school (reference) |           |               |               |               |
| n                           | 12,540        | 12,540        | 12,540        | 12,540        |

Source: Data are from the National Center for Education Statistics High School Longitudinal Study of 2009 (HSLS) restricted-use data.
Note: The sample is restricted to those who are nonmissing on race, college enrollment, and educational expectations. Data are multiply imputed. All sample sizes are rounded to the nearest 10 in accordance with National Center for Education Statistics restricted data use policies. SES = socioeconomic status.

* p < .05. ** p < .01. *** p < .001.
odds of enrolling are reduced by about 40 percent for each group. In models 2 to 4, after controlling for covariates known to be associated with college enrollment, racial differences in enrollment disappear. Additionally, the net effect of high educational expectations on enrollment is reduced but still large. In the fully specified model, model 4, having high educational expectations increases the odds of enrolling in a four-year college by about three times, net of other factors, for all students regardless of race/ethnicity.

Table 7, model 4, the fully specified model, shows that net of relevant covariates, the effect of educational expectations on enrollment does not differ by race/ethnicity, such that the positive effect of expectations holds for all students. In Table 8, I present predicted probabilities of the fully specified model in Table 7. I present marginal effects that are calculated both by subsample and for all observations. Results are similar with both calculations. I find that net of others, there are no significant contrasts in the AMEs of having high expectations on enrolling in a four-year college for any racial or ethnic group. This holds whether I examine these effects by subpopulation or with all observations.

In answering the question of whether the expectation-enrollment relationship varies by race/ethnicity and has changed over time, I find that it has. In examining Table 6 and Table 8 once more, Table 6 reveals that the second difference (all observations)—or rather the difference in the effect size of expectations on enrollment—for ELS is about .07 between white and black students and about .05 between white and Hispanic students. Both are significantly different. However, in the HSLS data, the magnitudes of these differences are about .03 and .02, respectively. Additionally, there are no longer significant second differences between racial/ethnic groups in the HSLS. Overall, although the effects of educational expectations on enrollment in a four-year college differ by race/ethnicity in the ELS 2004 cohort of high school seniors, they decrease in magnitude and do not differ in the HSLS 2013 cohort of high school seniors.

These results held against sensitivity tests that removed those who enrolled in four-year for-profit colleges. Rather, net of other factors, the effect of educational expectations on enrollment in four-year colleges looks more similar across racial/ethnic groups in 2015 than it did in 2006.

Comparing 10th Graders with 11th Graders

A key feature of examining change in the expectation-enrollment relationship over time is to compare cohorts in parallel ways. Because the ELS and HSLS do not ask questions in the same years, I examine the ELS class of 2004 in 10th grade and the HSLS class of 2013 in 11th grade. It is possible that comparing ELS 10th graders and HSLS 11th graders may distort the cohort comparison. I examine this in Appendix B and Appendix C. In Appendix B, I compare descriptive statistics for HSLS 9th graders with those for ELS 10th graders and HSLS 11th graders. I find that educational expectations decrease from ELS 10th graders to HSLS 11th graders. However, they also decrease across the ELS and the HSLS cohorts. For example, we would expect younger students to have higher educational expectations than older students, as their expectations have not been tempered by their time in the educational system (Jacob and Wilder Linkow 2011). However, the more recent HSLS 9th graders have lower expectations (58 percent are high) than the older ELS cohort 10th graders (73 percent) and even HSLS 11th graders (64

**Table 8.** Probability of Enrollment in a Four-Year College by 11th Grade Expectations and Race/Ethnicity: Marginal Effects of Expectations and Differences in Effects of Expectations across Race/Ethnicity, HSLS Restricted-Use Data.

| Race       | Expects BA or Above | Expects Less Than a BA | Expectation Gap (AME)/First Difference | Comparison Groups | Second Difference | Significant Contrasts |
|------------|---------------------|------------------------|---------------------------------------|-------------------|------------------|-----------------------|
| Calculated by subsample |                      |                        |                                       |                   |                  |                       |
| a. White   | .649                | .439                   | .210                                  |                   |                  |                       |
| b. Black   | .524                | .339                   | .185                                  |                   |                  |                       |
| c. Hispanic| .478                | .294                   | .184                                  |                   | Black-white      | .001                  |
| Calculated for all observations |                  |                        |                                       |                   |                  |                       |
| a. White   | .605                | .395                   | .210                                  |                   |                  |                       |
| b. Black   | .606                | .425                   | .182                                  |                   |                  |                       |
| c. Hispanic| .578                | .388                   | .190                                  |                   |                  |                       |

Source: Data are from the National Center for Education Statistics High School Longitudinal Study of 2009 (HSLS) restricted-use data.

Note: The sample is restricted to those who are nonmissing on race, college enrollment, and educational expectations. Educational expectations are measured from the spring of 11th grade. Controls for socioeconomic status, family background, prior achievement, student’s actions toward college-going, peer and school culture, and school characteristics are included. Contrasts indicate which gaps are significantly different across student groups (second differences). All sample sizes are rounded to the nearest 10 in accordance with National Center for Education Statistics restricted data use policies.
percent). HSLS 9th graders were interviewed in fall 2009, when they had just started high school. It is possible that they were simply too far from graduation to have fully considered their expectations. Overall, HSLS students have lower expectations in 9th and 11th grade than ELS students have in 10th grade, signaling lower expectations across the cohorts.

In Appendix C, I present comparative causal analyses using HSLS 9th grade and HSLS 11th grade expectations. I find that for both 9th and 11th grade expectations, there are no significant contrasts, such that the interaction effects for race/ethnicity and expectations on enrollment in a four-year college are not significant. Additionally, the tests of second differences for HSLS 9th grade expectations and HSLS 11th grade expectations are both smaller in magnitude than those for ELS 10th graders. In the case of the white-Hispanic tests of second difference, the magnitude decrease from ELS to HSLS is larger if we consider 9th grade expectations as opposed to 11th grade expectations. Thus, using HSLS 11th grade expectations provides similar and in some cases more conservative estimates of the decrease in the expectation-enrollment relationship by race/ethnicity over time. Overall, the data reveal a decline in the racial/ethnic gaps over time whether comparing ELS 10th graders with HSLS 9th graders or HSLS 11th graders.

**Expectations over Time**

Given changes over time in college enrollment patterns by different racial/ethnic groups as well as the observed changes here in the expectation-enrollment relationship by race/ethnicity, it is important to examine any potential changes in the net effect of educational expectations on enrollment. In model 4 of Table 5 and model 4 of Table 7, net of all other factors, having high educational expectations increases the odds of enrolling in a four-year college by about 3 times in the HSLS cohort and about 3.4 times in the more recent HSLS cohort. Thus, the effect of high educational expectations on enrollment in a four-year college remains large, positive, and roughly similar over time. Although it seems that the effect of expectations on enrollment has actually increased from the ELS to the HSLS cohort, it is important to keep in mind that HSLS 11th graders are closer to graduation than the ELS 10th graders. Thus it is possible that some of the increase in this effect size that we observe in the HSLS cohort is due to the expectations of HSLS students potentially being more accurate.

**Conclusion**

Educational expectations are associated with educational attainment (Bozick et al. 2010; Goyette 2008; Jacob and Wilder Linkow 2011; Morgan et al. 2013; Reynolds and Pemberton 2001; Reynolds et al. 2006; Sewell et al. 1969). Despite prior work on the high school classes of 1979, 1980, and 1992 suggesting that black and Hispanic students have higher educational expectations than their white peers net of SES (Hanson 1994; Hoffman 1987; Kao and Tienda 1998; Perna 2000) and work on the high school classes of 1999 and 2000 suggesting that black students have higher net educational expectations than their white peers (Reynolds and Pemberton 2001), black and Hispanic students remain the least likely to enroll in higher education. The most recent work on the expectation-enrollment relationship used the ELS data on the high school class of 2004 without fully examining heterogeneity in the relationship by race/ethnicity, such that they did not explore racial/ethnic differences in these relationships (Jacob and Wilder Linkow 2011; Morgan et al. 2013). I build upon prior work on the expectation-enrollment relationship by using data from both the ELS high school class of 2004 and HSLS high school class of 2013 and pay close attention to the underlying racial/ethnic heterogeneity in these relationships. Importantly, I include Hispanic students in my analysis, whereas much prior work in this area that did examine race focused primarily on black-white differences or used older data or data that are not nationally representative.

I find that the relationship between educational expectations and enrollment in a four-year college differs by race/ethnicity such that the effect of high educational expectations is positive for all groups, but it is smaller for both black and Hispanic students in the ELS 2004 cohort high school seniors. However, by the time we observe the HSLS 2013 cohort of high school seniors, the effect of educational expectations on enrollment in a four-year college within two years of high school graduation is similar across all groups; the gap in the expectation-enrollment relationship between black and Hispanic students and their white peers is no longer statistically significant.

There are a few possible explanations for this gap closure. First, descriptive statistics show that white students maintain the largest enrollment rates to date. However, substantial increases in enrollment among Hispanic students and moderate increases in enrollment for black students between 2000 and 2017 (McFarland et al. 2019) have led to overall declines in enrollment disparities by race/ethnicity. I also observe the HSLS cohort one year closer to their graduation year. Thus, as presented in the Table 3 row of students who state high educational expectations and enroll in four-year colleges, it is possible that the HSLS students are slightly more accurate in their stated educational expectations than the ELS 10th graders, leading to more equality in the expectation-enrollment relationship in this cohort. Finally, educational expectations appear to decline not only as students age through the school system but also across cohort, such that the more recent HSLS 9th graders had much lower educational expectations than ELS 10th graders. Despite these changes, as seen in this study, even net of other factors associated with expectations and enrollment...
such as family background, student prior achievement, and school culture, the overall effect of high educational expectations on enrollment in a four-year college has remained large and significant across the ELS and HSLS cohorts. Thus, I provide evidence that the role of net expectations in enrollment in a four-year college remains strong and similar across racial/ethnic groups.

This study is subject to some limitations. First, although the two data sets used are very similar, they do not always ask the same questions at the same stages of high school. Thus, the primary variable of educational expectations is measured from the 10th grade year for the ELS cohort but the 11th grade year for the HSLS cohort. One’s educational expectations typically become more accurate as respondents age and gain more information about their academic capabilities (Jacob and Wilder Linkow 2011). It follows that the educational expectations of the 11th graders in the HSLS cohort appear descriptively lower than those of the 10th graders in the ELS cohort. Thus, it is possible that we may be observing more accurate educational expectations for the newer HSLS cohort. Still, using data from the ELS 10th graders and HSLS 11th graders allows me to capture both cohorts at a time when they are as developmentally similar as possible given the design of both data sets. Importantly, as seen in Appendix C, using HSLS 9th grade expectations for the analyses would have produced the same story: racial/ethnic gaps in the expectation-enrollment relationship have declined over time. Additionally, I am only able to observe enrollment in a four-year college within two years of high school graduation for the newer HSLS cohort. Future research can conduct a cohort comparison by looking at later stage college enrollment as the HSLS cohort ages.

Another limitation of this study is that I examine only three racial/ethnic groups, given my focus on gaps between white students and students of color who have historically been underrepresented in higher education as well as the small sample sizes of remaining groups. However, as the diversity of this country continues to grow, future studies should include more racial/ethnic groups in the study of the expectation-enrollment relationship.

Through this cohort comparison, I find evidence for decreased racial/ethnic variation in the expectation-enrollment relationship. In the era of high educational expectations for all students, educational expectations remain important predictors of college enrollment, and the expectation-enrollment gap between racial/ethnic groups seems to be narrowing. This seemingly suggests that encouraging students to have high educational expectations can serve as a mechanism through which educational equity in college enrollment can be achieved. However, these gap closures in the expectation-enrollment relationship by race/ethnicity can likely also be explained by modest increases in enrollment by black and white students, larger increases in enrollment for Hispanic students, and the tempering of expectations not only as students age but also over time—across cohorts. Still, it is important to remember that these results are found net of several factors that are unequally distributed across racial/ethnic group, such as parental SES, family structure, and prior achievement. Thus, net of others, high educational expectations remain important predictors of college enrollment, suggesting benefits of promoting college-going for all students. As the racial/ethnic diversity of the United States increases, it is especially critical to understand factors that can promote college-going for the most disadvantaged groups. Thus, it is important that we continue to understand racial/ethnic differences in the expectation-enrollment relationship given the increasing diversity in the United States and the implications of educational attainment at both the individual and societal level.
# Appendix A. Descriptive Statistics in Sample and Out of Sample, ELS Restricted-Use Data and HSLS Restricted-Use Data.

|                | ELS                      | HSLS                      |
|----------------|--------------------------|---------------------------|
|                | In Sample n if Different from Total | Proportion Missing from 10,660 | Out of Sample n if Different from Total | Proportion Missing from 5,530 | Out of Sample n if Different from Total | Proportion Missing from 12,540 | Out of Sample n if Different from Total | Proportion Missing from 12,670 |
| **Sociodemographic factors** |                         |                           |                             |                             |                             |                             |                             |                           |
| Female (binary, 0/1)          | .53                      | .41                       | .52                        | .46                        | .46                        | 126.10                       | 126.10                       |                           |
| Expects BA (binary, 0/1)     | .73                      | .67                       | .64                        | .57                        | .57                        | 8,060                        | 8,060                        |                           |
| Race                        |                          |                           |                             |                             |                             |                             |                             |                           |
| White (binary, 0/1)          | .68                      | .58                       | .61                        | .55                        | .55                        | 6,370                        | 6,370                        |                           |
| Black (binary, 0/1)          | .15                      | .19                       | .15                        | .17                        | .17                        | 6,370                        | 6,370                        |                           |
| Hispanic (binary, 0/1)       | .16                      | .22                       | .25                        | .28                        | .28                        | 6,370                        | 6,370                        |                           |
| **Family background factors**|                         |                           |                             |                             |                             |                             |                             |                           |
| **Socioeconomic status**     |                          |                           |                             |                             |                             |                             |                             |                           |
| Quartile 1                  | .23                      | .30                       | .19                       | 12,160                     | .03                        | 21                          | 9,830                        | .22                        |
| Quartile 2                  | .25                      | .26                       | .19                       | 12,160                     | .03                        | 22                          | 9,830                        | .22                        |
| Quartile 3                  | .25                      | .24                       | .19                       | 12,160                     | .03                        | 21                          | 9,830                        | .22                        |
| Quartile 4                  | .27                      | .19                       | .20                       | 12,160                     | .03                        | 19                          | 9,830                        | .22                        |
| Quartile 5                  | —                        | —                         | .23                       | 12,160                     | .03                        | 16                          | 9,830                        | .22                        |
| Lives with "other" than both parents (binary, 0/1) | .41                      | .48                       | .26                       | 10,040                     | .20                        | 30                          | 6,600                        | .48                        |
| **Student prior achievement**|                          |                           |                             |                             |                             |                             |                             |                           |
| ELS math test score         | .03                      | −.24                      |                           |                             |                             |                             |                             |                           |
| HSLS math test score        | .08                      | 12,050                    | .04                        | −.17                       | 9,390                      | .26                          |                             |                           |
| **Student actions toward college-going** |                          |                           |                             |                             |                             |                             |                             |                           |
| SAT (binary, 0/1)            | .70                      | 9,670                     | .09                       | 63                         | 4,100                      | .26                          | 11,650                       | .07                        |
| AP exams (binary, 0/1)       | .37                      | 9,660                     | .10                       | 43                         | 4,060                      | .27                          | 12,280                       | .12                        |
| **School/peer culture**      |                          |                           |                             |                             |                             |                             |                             |                           |
| Most friends plan to attend college (binary, 0/1) | .57                      | 7,470                     | .30                       | 35                         | 3,080                      | .44                          | 12,140                       | .01                        |
| ≥50% of prior class attended four-year college (binary, 0/1) | .51                      | 7,760                     | .27                       | 34                         | 3,060                      | .45                          | 9,670                        | .23                        |
| **School factors**           |                          |                           |                             |                             |                             |                             |                             |                           |
| School in urban area (binary, 0/1) | .30                      | .32                       | .31                        | .33                        | .33                        | .37                          |                             |                           |
| School in South (binary, 0/1) | .36                      | .30                       | .38                        | .38                        | .38                        | .37                          |                             |                           |
| School type                 |                          |                           |                             |                             |                             |                             |                             |                           |
| Private                     | .03                      | .03                       | .04                        | .03                        | .03                        | .03                          |                             |                           |
| Public                      | .92                      | 94                        | .92                        | .94                        | .94                        | .94                          |                             |                           |
| Catholic                    | .05                      | .03                       | .04                        | .04                        | .04                        | .04                          |                             |                           |
| **Outcome**                 |                          |                           |                             |                             |                             |                             |                             |                           |
| Enrolled in four-year college by 2006 (binary, 0/1) | .49                      | .52                       | 1,870                      | .66                        | .48                        | 6,790                        | .46                          |                           |
| Weighted proportion         | 74.00                    | 26.00                     | 58.00                      | 42.00                      |                             |                             |                             |                           |
| n                           | 10,660                   | 5,530                     | 12,540                      | 12,670                     |                             |                             |                             |                           |

Sources: Data are from the National Center for Education Statistics (NCES) Education Longitudinal Study of 2002 (ELS) restricted-use data and the NCES High School Longitudinal Study of 2009 (HSLS) restricted-use data.

Note: Data are weighted by their respective panel weights. Sample sizes are rounded to the nearest 10 in accordance with NCES restricted data use policies.
Appendix B. Percentage of Students within Racial/Ethnic Group Expecting a BA, Enrolling in Four-Year Colleges within Two Years of High School Graduation, and Expecting and Enrolling, ELS and HSLS Restricted-Use Data.

|                                | White | Black | Hispanic | Total | n    |
|--------------------------------|-------|-------|----------|-------|------|
| Percentage with high expectations | ELS   | 75    | 73       | 64    | 73   | 10,660 |
|                                | HSLS (11th) | 69    | 64       | 54    | 64   | 12,540 |
|                                | HSLS (9th)  | 62    | 58       | 50    | 58   | 13,030 |
| Percentage enrolled in four-year college | ELS   | 56    | 42       | 29    | 49   | 10,660 |
|                                | HSLS (11th) | 56    | 40       | 33    | 48   | 12,540 |
|                                | HSLS (9th)  | 55    | 39       | 32    | 47   | 13,030 |
| Percentage with high expectations who enrolled in four-year colleges | ELS   | 67    | 50       | 39    | 61   | 10,660 |
|                                | HSLS (11th) | 71    | 56       | 51    | 65   | 12,540 |
|                                | HSLS (9th)  | 67    | 53       | 45    | 60   | 13,030 |

Sources: Data are from the National Center for Education Statistics (NCES) Education Longitudinal Study of 2002 (ELS) restricted-use data and the NCES High School Longitudinal Study of 2009 (HSLS) restricted-use data.

Note: Samples are restricted to those who are nonmissing on race, college enrollment, and educational expectations. Data are weighted by their respective panel weights. Sample sizes are rounded to the nearest 10 in accordance with NCES restricted data use policies.

Appendix C. Probability of Enrollment in a Four-Year College by Expectations and Race/Ethnicity: Marginal Effects of Expectations and Differences in Effects of Expectations across Race/Ethnicity, HSLS Restricted Data.

| Race  | Expects BA or Above | Expects Less Than a BA | Expectation Gap (AME)/First Difference | Comparison Groups | Second Difference | Significant Contrasts |
|-------|---------------------|------------------------|----------------------------------------|-------------------|-------------------|----------------------|
|       |                     |                        |                                       |                   |                   |                      |
| 11th grade expectations |                     |                        |                                       |                   |                   |                      |
| Calculated by subsample | a. White | .649  | .439  | .210 | White-black | .025 |                      |
|                                | b. Black | .524  | .339  | .185 | White-Hispanic | .026 |                      |
|                                | c. Hispanic | .478  | .294  | .184 | Black-white | .001 |                      |
| Calculated for all observations | a. White | .605  | .395  | .210 | White-black | .029 |                      |
|                                | b. Black | .606  | .425  | .182 | White-Hispanic | .021 |                      |
|                                | c. Hispanic | .578  | .388  | .190 | Black-white | -.008 |                      |
| 9th grade expectations |                     |                        |                                       |                   |                   |                      |
| Calculated by subsample | a. White | .607  | .509  | .098 | White-black | -.044 |                      |
|                                | b. Black | .504  | .362  | .142 | White-Hispanic | .004 |                      |
|                                | c. Hispanic | .438  | .344  | .094 | Black-white | .048 |                      |
| Calculated for all observations | a. White | .562  | .464  | .099 | White-black | -.038 |                      |
|                                | b. Black | .588  | .451  | .137 | White-Hispanic | .005 |                      |
|                                | c. Hispanic | .542  | .448  | .094 | Black-white | .043 |                      |

Source: Data are from the National Center for Education Statistics High School Longitudinal Study of 2009 (HSLS) restricted-use data.

Note: The Sample is restricted to those who are nonmissing on race, college enrollment, and educational expectations. Educational expectations are measured from the spring of 11th grade and the spring of 9th grade. Controls for socioeconomic status, family background, prior achievement, student’s actions toward college-going, peer and school culture, and school characteristics are included. All sample sizes are rounded to the nearest 10 in accordance with National Center for Education Statistics restricted data use policies. Contrasts indicate which gaps are significantly different across student groups (second differences).

Author’s Note

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