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Mismatch and academic performance at America's selective colleges and universities

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ABSTRACT



American selective colleges and universities use affirmative action policies to achieve diversity, given blacks and Latinos have somewhat lower SAT scores than their Asian and white peers. Critics of affirmative action argue that this results in lower grades and greater dropout among underrepresented minority groups. Using the Educational Longitudinal Study, a nationally representative longitudinal data set, we examine the relationship between SAT mismatch and college outcomes for students at selective institutions. We find that mismatch is not associated with graduation from a selective institution, but is associated with lower grades. The negative relationship between mismatch and grades holds for all racial-ethnic groups, not just blacks and Latinos, and is less predictive of academic performance than is high school grade point average. Thus, although mismatch may lower performance at selective colleges, it does not appear to prevent students who may have benefitted from affirmative action from obtaining important credentials from America's elite educational institutions.

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Introduction

Higher education in the United States is characterized by a hierarchical system of public and private institutions. In the post-Civil rights era, race-based affirmative action has been used at selective colleges and some less-selective colleges to increase diversity on college campuses (Bowen and Bok 1998; Grodsky and Kurlaender 2010). Kennedy (2013) defines affirmative action as “policies that offer individuals deemed to be affiliated with a beneficiary group a preference over others in competitions for employment, education or other valued resources” (20). The Civil Rights Act of 1964 mandated that colleges and universities receiving federal funding could not engage in

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racial discrimination (Rudenstine 2001). However, in 1965, President Johnson argued that civil rights laws were not enough to create equal opportunity (Beckman 2004). Affirmative action in higher education began in the 1960s to help racial minorities overcome a legacy of discrimination (Aguirre 2004). In the 1978 *Bakke* decision, the Supreme Court ruled that although quotas are unconstitutional, the state has a compelling interest in promoting diversity in higher education (*Regents of the University of California v. Bakke* 1978). In the 2003 *Gratz v. Bollinger* and *Grutter v. Bollinger* decisions that involved the University of Michigan, as well as the *Fisher v. The University of Texas* decisions of 2013 and 2016, The Court emphasized that affirmative action should be narrowly tailored and could be used to achieve a critical mass of underrepresented students where race-neutral methods cannot achieve adequate diversity.

The rationale for affirmative action has varied over time, with the goal shifting from one of countering racial discrimination to creating diversity in higher education. A diverse collegiate environment is thought to benefit all students by exposing them to myriad perspectives brought by students with varied experiences (Rudenstine 2001). Affirmative action creates racial and ethnic diversity by increasing the odds that black and Latino students are admitted to selective colleges, given that these groups have, on average, lower standardized test scores than whites and Asians (Kane 1998).

Opponents of affirmative action claim that the policy hurts black and Latino students by creating a mismatch between the academic preparation of its beneficiaries and the demands of the selective institutions they attend, thus lowering their academic performance and reducing their likelihood of graduating (Sander and Taylor 2012; Thernstrom and Thernstrom 1997). Mismatch is defined as the difference between a student's individual academic preparation and the mean level of preparation at the institution he or she attends; it is measured by subtracting a student's SAT score from the mean SAT score of the college or university. Attending a school with an institutional mean SAT score that is higher than one's own score is referred to in the literature as being "overmatched" or "mismatched" (Kuleander and Grodsky 2013). Those who oppose affirmative action argue that students who are overmatched find themselves in a context in which they cannot keep up with the academic progress of their peers with higher test scores, given that SAT scores predict academic performance in college. They argue that this ultimately leads to higher rates of dropout among underrepresented minority students. In this paper, we test the mismatch hypothesis by examining the relationship between mismatch and academic performance and that between mismatch and the likelihood of graduating among a racially and ethnically diverse, nationally representative sample of students at selective colleges.

Affirmative action and mismatch

SAT and ACT scores became an important part of defining college selectivity with the rise of college rankings, such as *U.S. News and World Report*, beginning in the 1980s. *U.S. News and World Report* uses various indicators to determine a college's ranking. For 2017, student selectivity makes up 12.5 per cent of the overall score that a college receives, with 65 per cent of student selectivity measured by SAT and ACT scores (Morse, Brooks, and Mason 2016). At the same time, selective colleges and universities strive to create racially and ethnically diverse cohorts of students. Because black and Latino students have, on average, lower test scores than their white and Asian peers, creating a diverse class has meant utilizing affirmative action (Kane 1998). Such policies give a boost to underrepresented students. Espenshade and Radford (2009), for example, find that black students receive a bonus in admissions relative to white students of, on average, 3.8 ACT points at public institutions and 310 SAT points at private institutions, with no advantage for Latinos at public schools, but a bonus of 130 SAT points at private schools. Bonuses such as these, according to opponents of affirmative action, make it less likely that black and Latino students do well academically and complete their degrees (Sander and Taylor 2012; Thernstrom and Thernstrom 1997). They argue that students with lower SAT scores are less prepared for college work at selective institutions, and that this lack of preparation prevents them from doing well in their courses, harms their self-esteem and causes them to drop out. For example, Thernstrom and Thernstrom (1997) assert that "When a student and a college are mismatched, the lower the SAT score, the less likely that student is to graduate" (410). Sowell (1974) maintains that admitting "underprepared" black students to selective institutions leads to a "high voluntary drop-out rate among black students" (182). Sowell (1993) further contends that affirmative action creates a cascading effect whereby top black students who might compete well with students at moderately selective institutions go to elite schools where they cannot compete, leaving lesser prepared black students at the moderately selective institutions. He suggests that this leads to lower grades and less self-confidence among black students at every type of institution. Sander and Taylor (2012) hypothesize that when postsecondary institutions use affirmative action, they create mismatch between the academic demands of institutions and the skills of students who benefit from the policy, which ultimately thwarts minority students' academic success at those institutions.

Despite such arguments, much of the empirical research testing the mismatch hypothesis has found little support for it (Alon and Tienda 2007; Charles et al. 2009; Cortes 2010). Melguizo (2010) finds that students of colour, in particular, are more likely to graduate when the institution is selective rather than non-selective. Alon and Tienda (2005), using multiple data sets corresponding to 1982, 1989 and 1992 cohorts of high school graduates,

find that although the average test scores and high school class ranks of black and Latino students in selective colleges fall below institutional means, larger gaps exist in non-selective colleges. Moreover, with respect to odds of graduating within six years, all racial and ethnic groups benefit from attending selective (and most-selective) colleges relative to their same-race counterparts who attend non-selective (or less-selective) colleges, with black and Latinos enjoying larger gains than whites. Likewise, Alon and Tienda (2007) find that when the University of Texas at Austin stopped using SAT scores in admissions, as part of the Top Ten Per cent Plan, the likelihood of graduating for underrepresented minorities did not decline. Heil, Reisel, and Attewell (2014), in their study examining the effects of selectivity on graduation, find no support for the idea that mismatched students were less likely to graduate. Some research even finds positive effects of mismatch. Indeed, Fischer and Massey (2007), in their analysis of 28 selective colleges and universities, find that black and Latino students with greater levels of mismatch have better grades and are more likely to graduate than students who are not mismatched.

Yet, other research finds mixed results on the effects of mismatch. Despite high graduation rates, mismatch may have implications for racial and ethnic gaps in grades. Like other studies, Bowen and Bok (1998) find that black students at selective institutions are more likely to graduate than those in other types of colleges. However, they also find that black students in selective colleges tend to have lower grades than white students. Black students with lower grades in selective institutions are still more likely to go on for an advanced degree than black students at less selective schools, meaning that perhaps lower grades were not as important as graduation from a selective college. Massey and Mooney (2007) find that at institutions where there are large gaps between minority and majority SAT scores, institutions with a wide application of affirmative action, minority students are actually *less* likely to leave school without a degree, though minority students in such institutions tend to receive lower grades.

We build on this research by analysing a recent cohort of students using nationally representative data. We seek to add to the conversation on the relationship between mismatch and academic performance by examining two outcomes: graduation from and grade point average (GPA) at a selective institution. We also build on the current literature by examining whether racial minorities are uniquely harmed by mismatch.

Data and methods

Data

In order to investigate the consequences of mismatch for students at selective colleges and universities, we use the Education Longitudinal Study of 2002

(ELS). The ELS is a nationally representative survey of tenth graders conducted by the National Center for Education Statistics (NCES) using a two-stage stratified probability sampling design. Surveys were conducted at 750 schools with over 15,000 tenth graders and their parents in 2002 (U.S. Department of Education 2004). Asian students were oversampled. A follow-up was done in 2004 that created a nationally representative sample of twelfth graders and additional follow-ups were done in 2006 and 2012. We use the ELS transcript data that include students' college transcript information, which allows us to examine college graduation and grades as indicated by the transcript rather than reported by students, themselves, thus avoiding potential errors in recall.

To examine the relationship between mismatch and graduation from a selective college, we selected those who were in the survey from 2004 to 2012 and attended a selective institution. We use the 2004 wave because it allows us to analyse high school seniors, our population of interest. We determine whether students attended a selective institution by matching institutions in the ELS data with information on college selectivity from *U.S. News and World Report* for 2004. We define selective colleges as those classified by *U.S. News* as Tier 1 institutions; that is, institutions in the top 25 per cent of their ranking. We select students who are white, Asian, Latino or black, and who have valid data on the panel weight and the outcome variable, which measures graduation from a selective college. Using these criteria gives us a sample of 940 students. To examine the relationship between mismatch and academic performance, we again select students who attended selective institutions, who are white, Asian, Latino or black, and who have valid information on GPA and panel weight, but add the criterion that students had not transferred to a non-selective institution. Using these criteria gives us a sample of 860 students.

We treat missing data on predictor variables via multiple imputation using Stata's *mi impute* command and analysed multiply imputed data sets with Stata's *mi estimate* commands. We do not impute dependent variables. The highest degree of missingness on a predictor variable was 7.13 per cent for the SAT mismatch variable (see Table 1). White, Royston, and Wood (2011) recommend setting the m to at least 100 times the fraction of missing information (FMI). Our largest FMI was .23 so we set m equal to 23, meaning that we generate and analyse 23 multiply imputed data sets. We also use Stata's *svy* commands to model the complex survey design in ELS and estimate correct standard errors. Finally, we use the panel weights provided by ELS to make our findings generalizable to 2004 high school seniors who enrolled in selective institutions.

Table 1. Means and percentage distributions: ELS: 2004–2012.

Independent variable	Percent/mean	S.E.
SAT mismatch	31.75	6.15
Missing	7.13	
Race and ethnicity		
Whites	70.70	
Blacks and Latinos	13.55	
Asians	15.75	
Missing	0.00	
Academic preparation		
High school GPA	3.59	0.02
Missing	5.07	
Took advanced placement courses	87.49	
Missing	5.07	
Public school	79.84	
Missing	0.00	
College experience		
In-state	62.38	
Missing	1.22	
Any extracurricular	92.75	
Missing	1.45	
Full-time student	99.43	
Missing	1.45	
Other control variables		
Socio-economic background	0.68	0.03
Missing	6.72	
Female	52.63	
Missing	0.00	

Note: Data are weighted. $N = 940$, rounded to the nearest ten as per NCES requirements.

Variables

Dependent variables. Graduation from a Selective College is a dummy variable from the 2012 transcript data that indicates whether a student has graduated from a selective college (1) or not (0). Transfer students are coded as 1 if they transferred to and graduated from a selective college and 0 if they transferred to a non-selective college.

Cumulative GPA is a variable from the 2012 transcript data. It ranges from 0 to 4 and indicates the student's cumulative GPA at the end of their college studies.

Independent variables and controls. SAT mismatch is the difference between a student's SAT score and the institutional mean SAT score. Where the institutional mean is not available we use the median SAT score. Where this is not available, we use the mean or median ACT score and convert it to mean SAT score. To convert ACT scores to SAT scores, we use a concordance table from the Princeton Review (see also Volkwein and Sweitzer 2006 for a similar approach). Mismatch is calculated by subtracting a student's SAT or converted ACT score from the institutional average SAT or converted ACT score. We divide the result by ten so that regression coefficients represent the change in the outcome variable that is associated with a 10-point change in mismatch.

Race–ethnicity is measured in 2002 with a group of dummy variables that indicate whether students identify as non-Hispanic white (reference category), black or Latino, and Asian. Blacks and Latinos are combined into one category due to their small sample size and the fact that they are both beneficiaries of affirmative action. Additionally, we include variables related to the student's high school experience and academic preparation: a continuous variable measures high school GPA and ranges from 0 to 4; a dummy variable indicates whether the student took one or more Advanced Placement courses, and a dummy variable indicates whether the student attended a public school.

We also include a vector of variables that measure, in 2006, aspects of students' college experiences that reflect Vincent Tinto's (1993) concept of commitment. These include dummy variables that indicate whether the student attends college in their home state, whether the student participates in extracurricular activities, and whether the student attends college full time. Students who attend college full time, participate in extracurricular activities, and attend college out of state are theorized to be more committed to their institutions of higher education than those who attend in their home state, participate in no extracurricular activities and enrol part time.

Finally, we include additional control variables measured in 2002. These include a dummy variable indicating gender (female = 1) as well as a composite measure of parents' socio-economic status "based on five equally weighted, standardized components: father's education, mother's education, family income, father's occupation, and mother's occupation" from the base year of the survey (U.S. Department of Education 2004, H-5). Occupational prestige is measured using Duncan Occupational Prestige scores. The composite measure is a z-score, with a mean of zero for the full sample of ELS, and a range of –2.11 to 1.82.

Analytical strategy

In this paper, we investigate how mismatch is associated with two higher education outcomes: GPA and graduation from a selective college. If the mismatch hypothesis is correct, then students with greater SAT mismatch will have lower cumulative GPAs and lower likelihood of graduating. We estimate three logistic regression models, the first of which examines the relationship between SAT mismatch and the likelihood of graduating from a selective institution among those who enrolled in one. Model 2 adds measures of race–ethnicity, academic preparation, socio-economic background, gender and aspects of students' college experiences that reflect Tinto's (1993) concept of commitment. Finally, Model 3 includes an interaction between race–ethnicity and mismatch. We include the interaction to test whether underrepresented minorities are uniquely affected by mismatch because much of the literature opposing affirmative action claims that mismatch harms blacks

and Latinos, but is silent on the harm that mismatch could cause other groups. We then turn to cumulative GPA as a dependent variable. Here, we estimate OLS regression models to examine the relationship between mismatch alone (in Model 1) and net of controls (Model 2). Again we include an interaction term in Model 3 to examine whether blacks and Latinos are uniquely impacted by mismatch.

Results

Descriptive statistics

Table 1 describes our sample of 2004 high school seniors who enrolled in selective colleges. On average, students in the sample scored 31.75 points below the mean SAT score of the institution they attended; this represents the average degree of mismatch in the sample. Mismatch ranges from 346 points above the institutional mean to 531 points below the institutional mean. The average high school GPA is 3.59 and 87.49 per cent of students have taken advanced placement courses. Most students, 79.84 per cent, attended a public high school. Also, most students, 62.38 per cent, attended a college in their home state. High percentages of students (92.75 per cent) participated in extracurricular activities in college and were full-time students (99.43 per cent). The students in the sample have relatively high socio-economic backgrounds at 0.68 (compared to 0 for the full ELS sample), which is not surprising for students who attend selective institutions. Slightly more than half of the sample is female.

Because group differences in college outcomes are fundamental to debates surrounding the consequences of mismatch, we show in **Table 2** descriptive statistics by race and ethnicity. There are a few noteworthy findings. First, all racial and ethnic groups have some degree of overmatch, whereby the scores of individual students fall below the mean of the institution they attend. Second, we note large differences in mismatch by race-ethnicity; whites, on average, are mismatched by just over 8 points and Asians are, on average, mismatched by about 25 points. Blacks and Latinos, however, are mismatched by an average of nearly 173 points. Thus, to the extent that mismatch complicates graduation and academic performance at selective colleges, we would expect to observe the negative effects of mismatch among blacks and Latinos more so than among whites and Asians. Additionally, blacks and Latinos have, on average, significantly lower high school GPAs compared to whites, while the GPAs of Asians are, on average, not statistically different from those of whites. With respect to course-taking, a greater percentage of Asians (nearly 94 per cent) take AP courses than the other groups. Blacks and Latinos are similar to whites with respect to taking AP courses. Asians are more likely than whites to attend public schools. Whites are the least likely of the racial-ethnic groups to attend in-

Table 2. Means and percentage distributions by race and ethnicity: ELS: 2004–2012.

Independent variable	Whites		Blacks and Latinos		Asians	
	Pct./		Pct./		Pct./	
	Mean	S.E.	Mean	S.E.	Mean	S.E.
SAT mismatch	8.09	6.44	172.57***	14.88	25.08	19.19
Missing	5.65		12.30		9.31	
Academic preparation						
High school GPA	3.62	0.02	3.46**	0.07	3.57	0.03
Missing	5.19		6.72		3.08	
Took advanced placement courses	86.3		86.36		93.66**	
Missing	5.19		6.72		3.08	
Public school	77.25		81.19		90.28***	
Missing	0.00		0.00		0.00	
College experience						
In-state	58.22		71.34*		73.74**	
Missing	0.65		2.73		2.46	
Any extracurricular	93.36		90.12		92.25	
Missing	0.87		2.73		2.94	
Full-time student	99.94		96.55		99.56	
Missing	0.85		2.73		3.07	
Other control variables						
Socio-economic background	0.79	0.03	0.24***	0.11	0.48***	0.07
Missing	3.41		14.85		14.62	
Female	52.74		49.80		54.55	
Missing	0.00		0.00		0.00	

Note: Data are weighted. N = 940, rounded to the nearest ten as per NCES requirements.

* $p \leq .05$.

** $p \leq .01$.

*** $p \leq .001$.

state selective colleges. Finally, whites at selective institutions come from higher socio-economic backgrounds than Asians and, particularly, blacks and Latinos.

Figure 1 shows the percentage of students at selective institutions who graduated by race–ethnicity. All groups have a very high rate of graduation. Blacks and Latinos, as a group, have the highest percentage of graduates with nearly 88 per cent obtaining bachelor's degrees from a selective college or university. However, differences in graduation rates between blacks and Latinos, collectively, and whites are not statistically significant, nor are differences between Asians and whites. Figure 2 shows the mean cumulative GPA of students enrolled in selective institutions by race–ethnicity. Here, the numbers do not look as promising for black and Latino students. White students have an average GPA of 3.19 and Asians have an average of 3.12, while black and Latino students have an average GPA of 2.94. These differences are statistically significant at $p < .05$.

Multivariate findings

Table 3 shows coefficients from logistic regression models that predict graduation from a selective institution. Model 1 describes the relationship between mismatch and the likelihood of graduating from a selective institution.

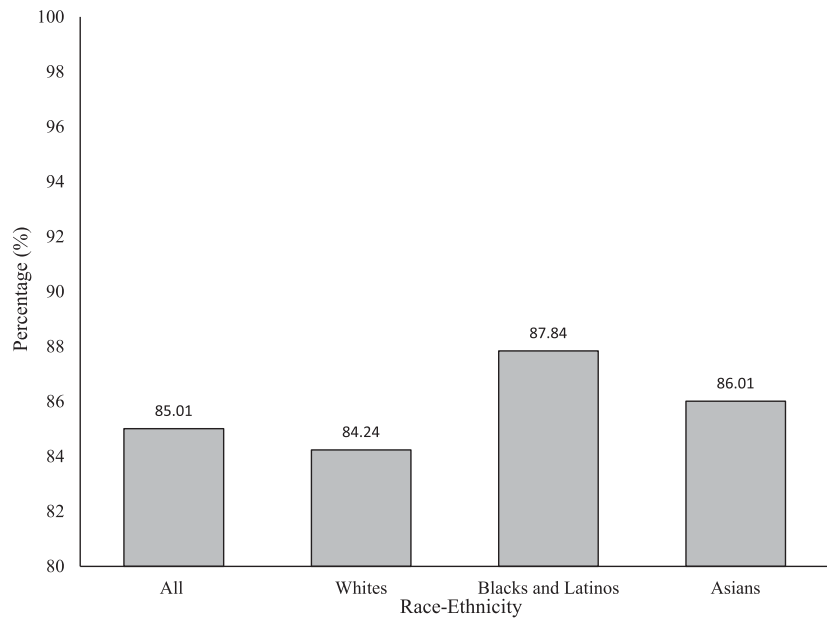


Figure 1. Per cent of students at selective colleges and universities who graduated by race-ethnicity.

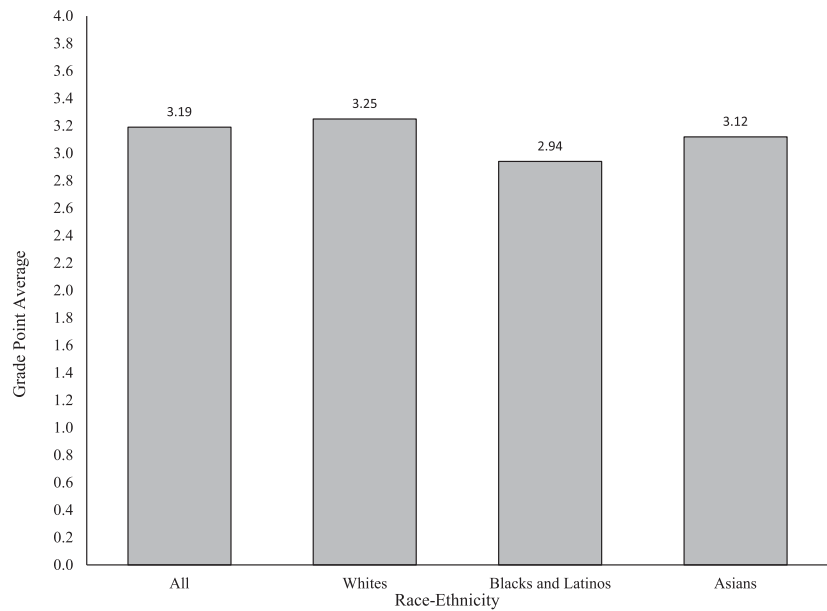


Figure 2. Mean cumulative GPA of students enrolled in a selective college or university by race-ethnicity.

Table 3. Coefficients from logistic regression models that predict graduation from a selective college or university among those who enrolled in one, ELS 2004–2012.

Independent variable	Model 1		Model 2		Model 3	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
SAT mismatch	−0.010	0.010	0.0003	0.011	0.010	0.013
Race and ethnicity						
Whites (ref.)						
Blacks and Latinos			0.711	0.379	1.091	0.650
Asians			0.329	0.323	0.467	0.363
Academic preparation						
High school GPA			1.321***	0.369	1.335***	0.372
Took advanced placement courses			0.194	0.349	0.239	0.350
Public high school			−0.224	0.215	−0.227	0.215
College experience						
In-state			0.200	0.261	0.196	0.261
Any extracurricular			0.168	0.422	0.109	0.434
Full-time student			−0.473	1.18	−0.448	1.188
Other control variables						
Socio-economic background			0.339	0.221	0.327	0.224
Female			−0.172	0.236	−0.165	0.236
Race × Mismatch						
Whites × Mismatch (ref.)						
Blacks and Latinos × Mismatch					−0.030	0.031
Asians × Mismatch					−0.029	0.021
Constant	1.773***	0.128	−2.988	1.793	−3.054	1.792
F-statistic	1.22		1.96*		1.77*	

Note: Data are weighted. N = 940, rounded to the nearest ten as per NCES requirements.

* $p \leq .05$.

** $p \leq .01$.

*** $p \leq .001$.

Although the relationship is negative, as would be expected by critics of affirmative action, the coefficient is not statistically significant. Model 2 adds additional independent variables and controls; among them, only high school grades predict graduation. As high school GPA increases, so does the likelihood of graduating from a selective institution. Controlling for students' socio-demographic characteristics, academic preparation and college experiences changes the relationship between mismatch and the odds of graduating from a negative to a positive one. This suggests that students who attend college with peers whose SAT scores are, on average, higher than their own may be more likely to graduate than their counterparts who attend colleges where the degree of mismatch is smaller. However, as in the previous model, this positive coefficient is not statistically significant. The interaction between mismatch and race–ethnicity in Model 3 shows that the relationship between mismatch and the odds of completing a degree from a selective college does not vary among whites, Asians, and blacks and Latinos.

Table 4 shows coefficients from OLS regression models that predict cumulative college GPA. Model 1 describes the association between mismatch and GPA. Here, we see that mismatch is associated with lower GPAs in selective

Table 4. Coefficients from OLS regression models that predict cumulative GPA among students enrolled in selective colleges and universities, ELS: 2004–2012.

Variables	Model 1		Model 2		Model 3	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
SAT mismatch	−0.013***	0.002	−0.007***	0.002	−0.006*	0.003
Race and ethnicity						
Whites (ref.)						
Blacks and Latinos			0.005	0.07	0.060	0.084
Asians			−0.036	0.052	−0.036	0.052
Academic preparation						
High school GPA			0.578***	0.105	0.580***	0.106
Took advanced placement courses			0.083	0.076	0.086	0.077
Public high school			−0.062	0.045	−0.060	0.046
College variables						
In-state			−0.085*	0.042	−0.084*	0.042
Any extracurricular			0.133	0.097	0.133	0.097
Full-time student			0.197	0.349	0.206	0.356
Other control variables						
Socio-economic background			0.094*	0.04	0.093*	0.04
Female			0.205***	0.04	0.205***	0.038
Race × Mismatch						
Whites × Mismatch (ref.)						
Blacks and Latinos × Mismatch					−0.004	0.005
Asians × Mismatch					−0.001	0.004
Constant	3.235***	0.027	0.693	0.487	0.671	0.492
F-statistic	56.71***		16.46***		13.62***	

Note: Data are weighted. N = 860, rounded to the nearest ten as per NCES requirements.

* $p \leq .05$.

** $p \leq .01$.

*** $p \leq .001$.

institutions; that association is statistically significant. With additional independent and control variables added, Model 2 shows that mismatch remains a statistically significant predictor of college GPA. Every 10-point increase in the difference between a student's SAT score and the mean SAT score for the institution is associated with a decline in GPA of 0.007 points. High school GPA is positively associated with college GPA, as is socio-economic background and being female. However, attending a selective institution in one's home state is negatively associated with academic performance. In addition to the unstandardized coefficients, we computed the standardized coefficients for continuous predictor variables – mismatch and high school GPA (not shown in tables). (The dependent variable is unstandardized.) Although mismatch is a negative predictor of college GPA, high school GPA is more strongly associated with college GPA. Net of other variables, college GPA changes by .102 points for every one standard deviation change in mismatch; however, college GPA changes by .202 points for every one standard deviation change in high school GPA. This means that the effect of mismatch is only about half the effect of high school GPA. Model 3 shows that the relationship between mismatch and cumulative college GPA does not vary by race–ethnicity.

Discussion and conclusion

Opponents of affirmative action in college admissions claim that the policy harms its beneficiaries by placing blacks and Latinos in competitive academic environments where their white and Asian peers are vastly more prepared, as indicated by racial and ethnic gaps in SAT scores. According to proponents of the mismatch hypothesis, disparities between an institution's mean SAT score and the scores of blacks and Latinos signal a lack of preparation among under-represented minorities for the academic rigors of selective institutions. Consequently, they argue that black and Latino students are less able to compete with better prepared peers, receive lower grades than had they gone to less competitive institutions, and have lower rates of graduation.

In this paper, we investigated the claims embedded in the mismatch hypothesis by examining the relationships between mismatch and academic outcomes among a nationally representative sample of high school seniors who attended selective institutions. Our results are consistent with the bulk of the existing literature, which finds no evidence of a negative relationship between mismatch and the odds of graduating from a selective college (Alon and Tienda 2007; Bowen and Bok 1998; Heil, Reisel, and Attewell 2014). Our findings, for example, are consistent with those of Massey and Probasco (2010) who find that students who may have benefitted from affirmative action are not less likely to graduate from a selective college. Therefore, one conclusion to draw from our findings is that mismatch does not appear to interfere with the ability of blacks and Latinos to graduate from selective institutions. Indeed, our descriptive statistics show that blacks and Latinos who entered selective colleges graduated from those institutions at rates that are similar to those of whites. We must exercise caution, however, and acknowledge the possibility that alternative model specifications or alternative data may have produced different results. Still, our findings are consistent with a long line of evidence that shows that all racial and ethnic groups benefit from the resources available at selective institutions that promote graduation, even those who are overmatched (Bowen and Bok 1998; Fischer and Massey 2007).

Although mismatch does not appear to be associated with lower odds of graduating among blacks and Latinos, it is associated with lower academic achievement. Regression models show that mismatch is a negative predictor of GPA for all racial and ethnic groups, not just for blacks and Latinos, given the absence of a statistically significant interaction. However, the contribution of mismatch to college academic performance should not be overstated. Although mismatch is a predictor of GPA in college, high school GPA has a larger association with college GPA than does mismatch.

How should one interpret results that show mixed support for the mismatch hypothesis? Opponents of affirmative action might suggest that mismatched students have trouble keeping up academically with peers

who have higher test scores. Opponents of affirmative action may also argue that higher grades lead to better career outcomes (Sander and Taylor 2012). However, Bowen and Bok (1998) have argued that despite lower grades, high graduation rates for minority students from selective institutions means that affirmative action is a success. They cite the beneficial outcomes that result from attending a selective institution such as increased likelihood of enrolling in graduate programs, increased earnings and job satisfaction, as well as increased civic participation. One reason is that the credential of a bachelor's degree, particularly from a selective institution, is critical in the United States; crossing that threshold, no matter one's GPA, alters one's earnings trajectory and, with that change, a host of other social, economic and health outcomes. Thus, despite lower grades among mismatched students, mismatch does not appear to decrease the likelihood of graduation from a selective college. This suggests that selective colleges are well prepared to retain students who are overmatched once they arrive on campus.

Our finding that high school GPA is more strongly associated with cumulative college GPA than is mismatch may have implications for how selective institutions treat SAT scores. Some colleges, for example, have achieved greater diversity on campus by dropping SAT scores as a criterion for admission and focusing on GPA, instead. Our research suggests that underrepresented students with strong GPAs might do well at selective colleges once they arrive.

Further research is warranted on this topic. Investigations of the relationship between mismatch and graduation would benefit from a data set with a larger sample of students in selective colleges in order to increase statistical power and lower the risk of Type II error. A larger data set would also allow researchers to examine the outcomes of blacks and Latinos separately. In addition, Fischer and Massey (2007) and Massey and Probasco (2010) include a measure of *institutional* affirmative action in their analyses by subtracting the average SAT for minority groups from the institutional mean. Including such a measure in our analysis might have provided additional information on institutional effects of affirmative action; that is, such a measure might have allowed us to investigate the relationship between mismatch and college outcomes across institutions that widely or narrowly apply affirmative action. Unfortunately, we are unable to do so because our data source for institutional SAT scores, the Academic Insights data from US News and World Report, does not provide scores by race and ethnicity. We suggest that future data collection should include such measures.

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