

Research Brief for Discussion

**Do Racially Disparate Advanced Course Enrollments Cause
Opportunity-to-Learn Gaps in U.S. High Schools?**

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Blacks and Hispanics in American high schools are less likely than whites to enroll in advanced courses, even when they attend the same schools (Ferguson, 2007, chapter 6). Consequently, if advanced courses provide better instruction and more opportunities to learn, then disparities in course enrollments may help perpetuate racial achievement gaps (e.g., Braddock and Slavin, 1993; Goldberg, Passow, and Justman, 1966; Oakes, 1983, 1985, 1987).

This research brief documents racial gaps in advanced-course enrollment for three-dozen suburban high schools in the Northeast and North Central U.S. It then measures what fraction of such gaps can be predicted using grade-point averages and socioeconomic background measures. Consistent with past studies, racial enrollment disparities are mostly, but not totally predicable using grade-point averages and socioeconomic status (SES) measures.

Next, the paper reports new findings on ways that advanced and regular classrooms differ, identifying several types of opportunity-to-learn differences across course levels. The data are survey responses concerning attitudes, behaviors and classroom learning conditions. Many students completed the survey in two of their

classes. For some students, one class was an advanced course and the other a regular class. This feature of the data – specifically, individuals who *each* reported from *both* advanced and regular classes – enables “within-student” estimates of how classroom conditions predict academic engagement in advanced versus regular classrooms. Classroom conditions for a given student in a given classroom are approximated using his or her classmates’ perceptions of curriculum and instruction.

The analysis here ventures inside the *black-boxes* of advanced and regular classrooms. On average, the analysis shows that advanced courses provide better learning environments than regular courses do in the same schools. They inspire students to behave better, work harder, and learn more, than the same students do in their regular courses. However, the differences are not always large and the implications for achievement gap strategies are mixed. Instead of focusing narrowly on placing more students of color in advanced courses, schools would do well to focus on improving both advanced and regular classroom conditions for learning.

Background

There is a long tradition of research in education aiming to understand the implications of grouping students in different combinations by ability, race and gender. Random assignment studies of the 1970s found that compared to heterogeneous grouping, grouping students by measured ability made no difference to achievement if instruction was not tailored to student needs. However, ability grouping could be a helpful practice if instruction was both high quality and tailored to the skill levels of students in the classroom (Kulik, 1992; Slavin, 1990).

In real classrooms, variations in quality can be vast and may be correlated with student skill levels. Studies based on real classrooms, not controlled experimental conditions, have tended to conclude that lower-achieving students, in particular, are least well taught when segregated in classes with other low-achieving peers. Possible explanations emphasize peer effects, teacher assignment practices (better teachers assigned to better students) and teacher motivation effects (e.g., Oakes, 1987; Pallas, Entwisle, Alexander and Stluka, 1994).

This paper concerns enrollment patterns in high schools. The current fashion in high schools is to group some students into courses regarded as “advanced,” (for example, honors, advanced placement and international baccalaureate courses) and other students into courses that go by various labels such as college prep or standard or, for some students, vocational technology or remedial. The current regime is more flexible than rigid “course tracking,” since contemporary enrollment decisions are not narrowly governed by aptitude measures or professional judgments. Instead, students and their parents are invited to collaborate with school officials in deciding which courses and sequences best meet their needs and interests. Advanced coursework is often encouraged, even for average students. Schools often support students to stretch themselves by enrolling in advanced courses, even if their past academic records are less than stellar.

Are black and Hispanic students in contemporary high schools under-enrolled in advanced classes? The answer depends upon the criteria one uses to make the judgment. If blacks and Hispanics were routinely less likely to enroll than whites with the same academic credentials, then one might conclude either that whites were over-enrolled or

that blacks and Hispanics were under-enrolled. However, I know of no large-scale studies that find racially disparate course enrollment patterns among youths who have *the same measured skills and academic records*. Indeed, when I examined the literature several years ago, I concluded the following:

Studies of tracking that use nationally representative samples of high schools from the early 1980s through the early 1990s find no statistically significant racial differences in placements or course taking once socio-economic status, test scores and past performance are taken into account (Garet & Delaney, 1988; Garmoran & Mare, 1989; Argys, Rees & Brewer, 1996).¹ Socio-economic status does, however, bias placements, such that students from families with more education and income are more likely to be enrolled in challenging tracks, even after controlling for their test scores. . . . Even with no controls for socio-economic status or past academic performance, black-white differences in reported track placement were relatively small in both years [1982 and 1992]. Movement out of vocational tracks over the decade was more toward the college prep or academic tracks for whites than for blacks, but even these differences are not large.² On the other hand, I suspect that track placements are more racially biased in *some* highly integrated schools. I also suspect that track placements are more racially biased at the highest levels *within* the college prep track (e.g., regular college prep versus "honors" or "advanced placement"). (Ferguson, 1998)

While past studies have focused typically on college prep versus vocational enrollments, the present paper concerns differences *within* the college prep cluster of course levels. Among college preparatory courses, it is well known that students of color, most frequently blacks and Hispanics, are over-represented at the high school level in average-level courses and under-represented in advanced courses. Nowhere is this more apparent than in racially mixed suburban districts, especially where many

¹ Even without taking scores into account, differences are small. For example, in the nationally representative High School and Beyond (HS&B) sample the simple correlation for 10th graders in 1980 was only -0.13 between track placement and black or Hispanic status, with minorities in lower tracks. The simple correlation between advanced mathematics courses and minority status was -.20. Even differences in course-taking, however, were predictable in multivariate equations by academic background and prior test scores, with no residual difference due to race. See Lee and Bryk, 1988, table 6, page 86.

² A related fact is that the number of math and science courses taken by blacks and whites converged between 1982 and 1992, even as both groups increased courses in both subjects. See Table 133, National Center for Education Statistics, Digest of Education Statistics, 1996.

students come from white-collar, college educated, upper-middle income households. However, similar patterns can be found in some inner city schools. Heightened by contemporary concerns about racial achievement gaps, the prevalence, causes and consequences of racial imbalances in advanced-level course taking beg to be understood.

Race/Ethnic Disparities in Advanced Enrollment

A class is designated *advanced* in this analysis if at least 75 percent of respondents from that class (of at least 10 students) respond affirmatively that the class is advanced. The survey item that identifies whether a class is advanced is the following: “*Is this an advanced class (for example, an honors class or advanced placement)?*” Respondents indicate “yes” or “no.”

There is a great variability across schools in our sample in the percentage of students in advanced classes. Absolute racial differences in enrollment rates tend to be lowest where the total advanced class enrollment rates are lowest. Comparing whites with a composite for blacks and Hispanics, Figure 1 shows that gaps in advanced versus regular class enrollment rates grow quickly larger, once the total percentage in advanced classes passes 20 percent. Therefore, in Tables 1 and 2, we focus the regression estimates on the 21 high schools for which the overall advanced-course rate is at least 20 percent.

Table 1 shows estimates for the 21 schools all together (columns 1 and 2) as well as separately for schools where whites represent fewer than half of respondents (6 of the 21 schools, columns 3 and 4) and half or more (15 of the 21 schools, columns 5

and 6). Regression estimates in all six columns of the table use school-level fixed effects, such that the SES, GPA, and race and gender coefficient estimates are measuring within-school variation.

The coefficient estimates in the first column of Table 1 indicate, for example, that black males are 21.5 percentage points less represented in advanced classes on average than white males. Among white males, 34 percent are enrolled in advanced classes.³ The difference between 34 and 21.5 indicates that only 12.5 percent of black males as compared with 34 percent of white males are in classes identified as advanced. Since black females are 14.1 percentage points behind white males, but white females are 6.8 percentage points ahead of white males, the difference of 20.9 percentage points puts the black-white gap for females at essentially the same level as for males.

Hispanics in these schools are a few percentage points more represented than blacks are in advanced courses, while Asian males and females, respectively, are 13 percentage points more represented than white males and about 6 percentage points more represented than white females. Columns 3 and 5 show similar patterns to column 1.

Columns 2, 4 and 6 control for grade point average (GPA) and SES. The SES measure in the analysis is a regression generated prediction of grade point average, using a long list of family background measures, *excluding* race. The background measures include household structure, parental education, numbers of books in the home, numbers of computers in the home, numbers of children in the home, and the percentage of the time that a language other than English is spoken at home. Using these background indicators, our measure of SES is what one would predict a student's grade point average to be based only on knowing his family background and assuming

³ See the constant term, 0.34, where white males comprise the omitted, base category.

that family background translates to GPA in the same way for students of every background. For high school students in the data, this measure of SES ranges from a low of 1.92 to a high of 3.59 (on a 4-point GPA scale) with a standard deviation of 0.33.

Columns 2, 4 and 6 show that GPA and SES typically predict half or more of the enrollment differences that columns 1, 3 and 5 have listed. Generally, GPA and SES predict more of the enrollment differences in the 15 majority white schools than in the 6 majority non-white schools. Black and Hispanic males (but not females) are statistically significantly less enrolled than white males in the majority nonwhite schools, even after controlling for SES and GPA. However, in the majority white schools, there are no remaining statistically significant differences between white males and black and Hispanic males and females after SES and GPA are taken into account.

Table 2 is included to show that enrollment gaps compared to whites tend to be larger for blacks and Hispanics at higher GPA levels. Among students reporting A-minus and A GPAs, 48.6 percent of white males, but only 27.5 percent of black males, 35.8 percent of black females, 32.0 percent of Hispanic males and 32.3 percent of Hispanic females are in advanced classes. White females at this GPA level were statistically indistinguishable from white males, at 51.1 percent.

Clearly, whatever the reasons, there are large racial gaps in these schools in the percentages of students from different racial groups experiencing advanced-level classes. How different are advanced and regular classes with regard to learning conditions? In what ways might such differences affect learning outcomes?

Classroom Conditions

Data used in this paper were collected during 2005 and 2006 from (mostly) suburban high schools across several states as part of a school improvement project.⁴ Surveys were anonymous, but nonetheless included school, classroom and student identifiers, enabling us to link individual students with particular classes. Two-thirds of the items on each survey concern the student's attitudes and experiences in the specific classroom where he or she completed the survey.⁵

The analysis here uses responses from students each of whom responded in multiple classrooms. This enables our research design to include “within-student” comparisons of learning conditions and student engagement patterns across classrooms. Over 11,000 responses came from students who responded in multiple classrooms. More than one third of the latter represent “switchers” — our label for students who responded in one classroom identified as advanced and one that was what we call “regular.” The availability of switchers in the data allow us to avoid some standard self-selection issues: we can structure the analysis to ask, “How differently does the same student respond to advanced versus regular classrooms?” To the degree that individuals enrolled in both advanced and regular classes (i.e., switchers) respond differently to the two types of classes, we seek to understand what classroom conditions help account for these *within-student* response differences. So, we estimate what portion of individual-level differences in advanced versus regular classroom

⁴ Schools receive various improvement services and reports on student attitudes and school experiences.

⁵ Typically, a school conducts the survey school-wide in classes during one or two periods of the day and sometimes over multiple years, to track progress.

engagement behaviors are predictable as a function of particular classroom norms and practices.

Conceptually, the school improvement project from which our data come is focused on several categories of classroom *conditions* (one might say, resources and incentives) as predictors of student *engagement* (some aspects of which can be understood as behavioral *choices* students make in response to classroom conditions).⁶

As defined more thoroughly below, the specific classroom conditions that this paper explores as predictors of student engagement are labeled:

1. *Class Focused on High Goals (z-values)*
2. *Skillfully Responsive Teaching (z-values)*
3. *Enjoyable Lessons (z-values)*
4. *Challenging Lessons (z-values)*
5. *Relevant Lessons (z-values)*
6. *Positive Behavior Climate (z-values)*
7. *Classmates' SES, race and gender.*

The survey items used to measure 1 through 6 are listed in the *Appendix for Indices*.

To measure a specific condition that a particular student faces in any given classroom, we take the average of responses from his or her classmates (excluding the student's own response) concerning the condition under consideration. Using classmates' perceptions (with the student's own removed) helps purge our classroom

⁶ A more detailed background discussion of these will appear in a later draft. The project also addresses a set of building-level conditions among the adults as a professional learning community, but those are beyond the scope of this paper.

condition measures of the reverse causation in which a student's own engagement might affect the conditions that he or she experiences.⁷

The student engagement behaviors (one might say choices) that we expect to be more prevalent in advanced than regular classes conditions are:

1. *Weekly Homework Hours*
2. *On-Time Class Attendance*
3. *Ambitiousness*
4. *Diligence*
5. *Intellectual Growth*

Each category is measured by one or more survey items (see the *Appendix for Indices*).

How Advanced and Regular Classes Differ

Tables 3 through 8 show multiple regression results in which the only data used are responses from the students we call “switchers” as defined above. All use student-level fixed effects. Classroom-condition measures are scaled to be “z-values” (i.e., each with a mean of zero and standard deviation equal to 1). Table 3 reports on regressions where an indicator variable captures whether the class is advanced. The coefficients reported for the advanced-class indicator show that three classroom conditions differ most between advanced and regular classes. Specifically, the greatest differences are (1) a greater focus on high goals for learning, (2) more challenging lessons and (3) a positive behavior climate. Two conditions – skillfully responsive teaching and relevant lessons – differed less between the two types of classes and enjoyment of lessons, as measured here, differed not at all.

⁷ Classrooms in the analysis are restricted to have at least ten and no more than fifty student responses.

Tables 4 to 8 show regression results that illustrate the degrees to which classroom condition measures predict student engagement. Columns 2 through 4 of each table are for regressions that control for student SES and classroom racial composition. Columns 3, 4 and 5 include classroom-condition measures. As indicated above, each classroom condition measure in Tables 4 to 8 is a classroom average in which the student's own responses are omitted. Hence, each measure uses classmates' judgments as indicators of the student's own experience of the classroom environment.

The coefficient estimate on the advanced class indicator in the first column of each table in Tables 4 through 8 shows how different advanced classes are compared to regular classes, estimated with no controls aside from the student-level fixed effects. Adding the classroom SES and racial composition variables in column 2, makes hardly any difference at all to the estimate of how advanced and regular classes differ. However, adding the classroom condition variables in columns 3 through 5 reduces the coefficient on the advanced class indicator by half or more in the case of each student engagement measure.

The conclusion based on these tables is that conditions in advanced classes do differ from those in regular classes. Furthermore, compared to their regular classes, the incentives and support systems in advanced classes lead students to spend more time on homework, to be more punctual, to set higher goals for learning, to work harder, and to perceive that they experience more intellectual growth. All of these are "within-student" differences, estimated using reports of classroom conditions from surveys completed by their classmates.

Conclusion

Students surveyed in multiple classrooms work harder and take their studies more seriously in advanced classrooms. However, the most important point to emphasize may be that the differences between advanced and regular classes are, in fact, not on average very large. There are highly-rated and poorly-rated classrooms in each category. As with many phenomena, there is much more quality variation within these categories than between them. Efforts to place more students into advanced courses need to be balanced by efforts to improve classroom environments across the board. Students deserve high quality environments in both advanced and regular classrooms.

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Appendix for Indices

Classroom Condition Indices Used in Tables 3 to 8

Class is Focused on High Goals (alpha=0.65)

My teacher wants us to use our thinking skills, not just memorize things.
In this class, really understanding the material is the main goal.
In this class, getting the right answers is very important.
In this class, getting good grades is the main goal.

Skillfully Responsive Teaching (alpha=0.93)

If you don't understand something, my teacher explains it another way.
My teacher has several good ways to explain each topic that we cover.
My teacher in this class likes it when we ask questions.
The teacher in this class welcomes questions if anyone gets confused.
The teacher in this class shows that he/she will help me succeed in class.
The teacher in this class encourages me to do my best.
My teacher in this class treats the students with respect.
My teacher is enthusiastic about what he/she is teaching.

Enjoyable Lessons (alpha=0.83)

I enjoy doing the work for this class.
I like the topics we learn about in this class.
When I work hard for this class an important reason is because I enjoy it.

Challenging Lessons (alpha=0.64)

The hardest lessons in this class are very difficult for me.
Other students understand the lessons in this class better than I do.

Relevant Lessons (alpha=0.65)

Things I am learning in this class will help me in my life.
I often feel like this class has nothing to do with real life outside school. (neg)

Positive Behavior Climate (alpha=0.72)

My classmates behave the way my teacher wants them to.
Students in this class treat the teacher with respect.

Student Engagement Indices Used in Tables 3 to 8

Weekly Homework Hours

About how much time in a week do you usually spend studying or doing homework for this class?

On-Time Class Attendance (alpha=.61)

For this class, I try hard to be on time and not to be absent.
I don't really care whether I arrive on time to this class. (neg)

Ambitiousness (alpha=0.77)

In this class, it is important to me to thoroughly understand my class work.
One of my goals in this class is to learn as much as I can.

Diligence

I have pushed myself to completely understand my lessons in this class.

Intellectual Growth

This class makes me a better thinker.

Figure 1: Proportions of Whites (N=14136) compared to "Blacks & Hispanics" (N=4425) responding to the student survey in advanced classes in each of 32 high schools.

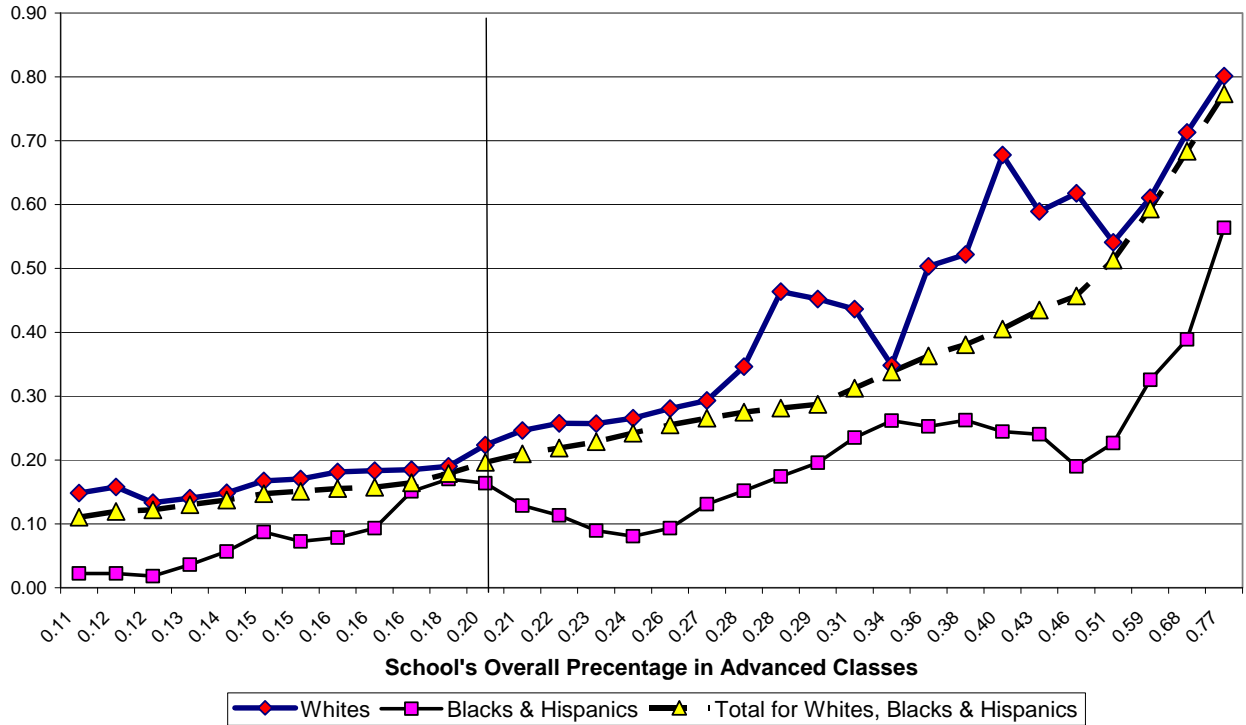


Table 1
Multiple regression results, predicting participation (0,1) in advanced classes
overall for 21 high schools and for two racial composition categories.¹

	Overall (21 Schools)		Schools 0–49.9 % White (6 Schools)		Schools 50–100 % White (15 Schools)	
	(1)	(2)	(3)	(4)	(5)	(6)
SES Index (z-values)		0.072 (0.006)**		0.087 (0.015)**		0.068 (0.007)**
SES Index SQ		0.013 (0.004)**		0.017 (0.009)		0.016 (0.004)**
GPA (z-values)		0.132 (0.010)**		0.144 (0.018)**		0.127 (0.011)**
GPA (z) Squared		0.034 (0.004)**		0.031 (0.007)**		0.036 (0.005)**
White Males	(base)	(base)	(base)	(base)	(base)	(base)
White Females	0.068 (0.014)**	0.035 (0.014)*	0.085 (0.034)*	0.064 (0.033)	0.065 (0.016)**	0.031 (0.015)*
Black Males	-0.215 (0.023)**	-0.077 (0.021)**	-0.242 (0.041)**	-0.104 (0.033)**	-0.201 (0.026)**	-0.037 (0.024)
Black Females	-0.141 (0.023)**	-0.030 (0.021)	-0.129 (0.044)**	-0.021 (0.039)	-0.185 (0.027)**	-0.049 (0.026)
Hispanic Males	-0.162 (0.029)**	-0.051 (0.026)*	-0.254 (0.050)**	-0.124 (0.043)**	-0.107 (0.034)**	0.001 (0.031)
Hispanic Females	-0.119 (0.035)**	-0.046 (0.033)	-0.149 (0.066)*	-0.068 (0.060)	-0.110 (0.038)**	-0.033 (0.037)
Asian Males	0.131 (0.030)**	0.086 (0.027)**	0.194 (0.079)*	0.154 (0.078)	0.123 (0.032)**	0.078 (0.029)**
Asian Females	0.132 (0.029)**	0.068 (0.027)*	0.043 (0.063)	0.013 (0.061)	0.146 (0.031)**	0.077 (0.030)**
Other Ethn Males	-0.072 (0.017)**	-0.026 (0.016)	-0.156 (0.038)**	-0.080 (0.034)*	-0.044 (0.019)*	-0.007 (0.018)
Other Ethn Females	-0.011 (0.019)	0.018 (0.017)	-0.074 (0.039)	-0.004 (0.035)	0.011 (0.021)	0.026 (0.020)
School Fixed Effects	YES	YES	YES	YES	YES	YES
Constant	0.341 (0.021)**	0.227 (0.019)**	0.372 (0.047)**	0.316 (0.042)**	0.334 (0.024)**	0.199 (0.022)**
Observations	11633	11633	2785	2785	8848	8848
R-squared	0.10	0.19	0.11	0.20	0.10	0.18

¹Included are schools in which at least 20% who responded to the survey responded in advanced classes. Schools in two large cities were excluded from the results reported in this table, because of their racial/ethnic homogeneity. Robust standard errors in parentheses, adjusted for clustering by classroom.

* significant at 5%; ** significant at 1%

Table 2
Multiple regression results, predicting participation in advanced classes (0,1)
overall for 21 high schools and for students in three grade-point-average categories.¹

GPA Range:	GPA<B-minus		B-minus ≤ GPA ≤ B-plus		A-minus≤GPA	
	(1)	(2)	(3)	(4)	(5)	(6)
SES Index (z-values)		0.041 (0.009)**		0.087 (0.009)**		0.092 (0.013)**
SES Index SQ		0.010 (0.006)		0.013 (0.006)*		0.006 (0.008)
White Males	(base)	(base)	(base)	(base)	(base)	(base)
White Females	0.012 (0.020)	0.016 (0.020)	0.033 (0.018)	0.037 (0.018)*	0.025 (0.021)	0.029 (0.021)
Black Males	-0.066 (0.020)**	-0.039 (0.019)*	-0.165 (0.031)**	-0.086 (0.030)**	-0.211 (0.053)**	-0.135 (0.053)*
Black Females	-0.027 (0.025)	0.002 (0.025)	-0.109 (0.031)**	-0.045 (0.031)	-0.128 (0.053)*	-0.064 (0.052)
Hispanic Males	-0.048 (0.027)	-0.017 (0.028)	-0.079 (0.039)*	-0.018 (0.037)	-0.166 (0.074)*	-0.120 (0.073)
Hispanic Females	-0.047 (0.036)	-0.022 (0.037)	-0.069 (0.045)	-0.000 (0.045)	-0.163 (0.063)*	-0.101 (0.063)
Asian Males	-0.057 (0.057)	-0.056 (0.057)	0.120 (0.047)*	0.133 (0.046)**	0.079 (0.038)*	0.083 (0.037)*
Asian Females	-0.025 (0.066)	-0.002 (0.039)	0.133 (0.165)	0.149 (0.086)	0.038 (0.211)	0.035 (0.135)
Other Ethn Males	-0.002 (0.022)	0.014 (0.022)	-0.070 (0.024)**	-0.047 (0.023)*	-0.053 (0.031)	-0.033 (0.030)
Other Ethn Females	0.003 (0.025)	0.020 (0.026)	-0.027 (0.024)	0.013 (0.024)	0.003 (0.030)	0.028 (0.030)
School Fixed Effects	YES	YES	YES	YES	YES	YES
Constant	0.136 (0.016)**	0.122 (0.017)**	0.318 (0.023)**	0.237 (0.022)**	0.486 (0.028)**	0.378 (0.029)**
Observations	2516	2516	4725	4725	4392	4392
R-squared	0.13	0.14	0.12	0.15	0.07	0.09

¹Included are schools in which at least 20% responded to the survey in advanced classes. Schools in two large cities were excluded from the results reported in this table, because of their racial/ethnic homogeneity.

Robust standard errors in parentheses, adjusted for clustering by classroom.

* significant at 5%; ** significant at 1%

Table 3

Regression results predicting classroom conditions by whether the class is advanced, or not. Regressions include student level fixed effects and only include students who were “switchers.”

Panel A.	<i>Class is Focused on High Goals</i>	<i>Skillfully Responsive Teaching</i>	<i>Enjoyable Lessons</i>	<i>Challenging Lessons</i>
	(1)	(2)	(3)	(4)
Advanced Class (1,0)	0.435**	0.207**	0.012	0.333**
	(0.032)	(0.037)	(0.037)	(0.034)
Student-fixed effects	yes	yes	yes	yes
Constant	-0.187**	0.002	0.122**	-0.262**
	(0.019)	(0.021)	(0.019)	(0.018)
Observations	3226	3268	3325	3215
R-squared	0.67	0.65	0.64	0.66
Panel B.	<i>Relevant Lessons</i>	<i>Positive Behavior Climate</i>		
	(5)	(6)		
Advanced Class (1,0)	0.140**	0.311**		
	(0.035)	(0.037)		
Student-fixed effects	yes	yes		
Constant	-0.085**	-0.019		
	(0.020)	(0.020)		
Observations	3222	3157		
R-squared	0.65	0.67		
<p>Note: Only “switchers” surveyed in multiple classes with 10-50 students per class are included. All columns include student-level fixed effects. Explanatory indices 1 through 7 measure the mean of classmates’ responses, omitting the student’s own response. Robust standard errors in parentheses, adjusted for clustering by classroom. * significant at 5%; ** significant at 1%</p>				

Table 4
Multiple regression results for the student's **WEEKLY HOMEWORK HOURS**
in the surveyed classes. Measured in hours per week.
(See note below.)

	(1)	(2)	(3)	(4)	(5)
CLASSROOM CONDITIONS:					
1. <i>Advanced Class (0,1)</i>	0.987 (0.080)**	0.873 (0.093)**	0.404 (0.095)**	0.386 (0.094)**	0.384 (0.094)**
2. <i>Class is Focused on High Goals (z)</i>	--	--	1.240 (0.142)**	1.115 (0.150)**	1.065 (0.131)**
3. <i>Skillfully Responsive Teaching (z)</i>	--	--	-0.312 (0.142)*	-0.107 (0.154)	--
4. <i>Enjoyable Lessons (z)</i>	--	--	--	-0.420 (0.131)**	-0.461 (0.121)**
5. <i>Challenging Lessons (z)</i>	--	--	0.258 (0.105)*	0.186 (0.106)	0.196 (0.105)
6. <i>Relevant Lessons (z)</i>	--	--	-0.074 (0.132)	0.000 (0.138)	-0.016 (0.137)
7. <i>Positive Behavior Climate (z)</i>	--	--	0.307 (0.132)*	0.429 (0.137)**	0.405 (0.130)**
Classmates' Mean SES (s.d.=.20)	--	0.965 (0.540)	0.987 (0.483)*	0.960 (0.485)*	1.000 (0.479)*
Class proportion black males	--	-1.193 (0.780)	-0.066 (0.669)	-0.138 (0.682)	-0.119 (0.685)
Class proportion black females	--	-1.294 (0.614)*	-0.710 (0.588)	-0.786 (0.596)	-0.788 (0.597)
Class proportion Hispanic males	--	-0.732 (0.779)	-0.833 (0.731)	-0.739 (0.739)	-0.720 (0.739)
Class proportion Hispanic females	--	-0.763 (0.672)	-1.100 (0.652)	-1.005 (0.651)	-0.973 (0.651)
Class proportion Asian males	--	0.026 (1.043)	0.112 (0.986)	0.173 (0.994)	0.170 (0.997)
Class proportion Asian females	--	-0.589 (0.963)	0.304 (0.852)	0.481 (0.861)	0.530 (0.850)
Class proportion white males	--	(base)	(base)	(base)	(base)
Class proportion white females	--	-0.604 (0.471)	-0.555 (0.460)	-0.645 (0.454)	-0.649 (0.454)
Class proportion other ethnicity males	--	-0.408 (0.826)	-0.403 (0.740)	-0.320 (0.730)	-0.301 (0.734)
Class proportion other ethnicity females	--	-0.238 (0.759)	0.536 (0.681)	0.596 (0.677)	0.600 (0.678)
Student-level fixed effects	yes	yes	yes	yes	yes
Constant	1.370 (0.042)**	-0.909 (1.719)	-0.985 (1.543)	-0.886 (1.554)	-1.010 (1.537)
Observations	3031	3031	3031	3031	3031
R-squared	0.72	0.72	0.75	0.75	0.75
Note: Only "switchers" surveyed in multiple classes with 10-50 students per class are included. All columns include student-level fixed effects. Explanatory indices 1 through 7 measure the mean of classmates' responses, omitting the student's own response. Robust standard errors in parentheses, adjusted for clustering by classroom. * significant at 5%; ** significant at 1%					

Table 5
Multiple regression results for **ON-TIME CLASS ATTENDANCE (z)**
e.g., “For this class, I try hard to be on time and not to be absent.”
(See note below.)

	(1)	(2)	(3)	(4)	(5)
CLASSROOM CONDITIONS:					
1. <i>Advanced Class</i> (0,1)	0.288 (0.026)**	0.268 (0.031)**	0.125 (0.034)**	0.124 (0.033)**	0.126 (0.034)**
2. <i>Class is Focused on High Goals</i> (z)	--	--	0.369 (0.058)**	0.364 (0.061)**	0.406 (0.058)**
3. <i>Skillfully Responsive Teaching</i> (z)	--	--	0.085 (0.046)	0.093 (0.052)	--
4. <i>Enjoyable Lessons</i> (z)	--	--	--	-0.016 (0.051)	0.020 (0.045)
5. <i>Challenging Lessons</i> (z)	--	--	-0.038 (0.045)	-0.041 (0.046)	-0.049 (0.046)
6. <i>Relevant Lessons</i> (z)	--	--	-0.064 (0.047)	-0.061 (0.048)	-0.047 (0.047)
7. <i>Positive Behavior Climate</i> (z)	--	--	0.065 (0.045)	0.070 (0.048)	0.091 (0.047)
Classmates’ Mean SES (s.d.=.20)	--	0.053 (0.177)	0.070 (0.167)	0.069 (0.167)	0.034 (0.166)
Class proportion black males	--	-0.265 (0.285)	0.205 (0.282)	0.203 (0.282)	0.187 (0.281)
Class proportion black females	--	0.241 (0.267)	0.407 (0.246)	0.404 (0.247)	0.406 (0.248)
Class proportion Hispanic males	--	-0.146 (0.317)	-0.113 (0.308)	-0.109 (0.309)	-0.128 (0.311)
Class proportion Hispanic females	--	0.086 (0.256)	-0.095 (0.250)	-0.091 (0.249)	-0.119 (0.251)
Class proportion Asian males	--	0.206 (0.350)	0.172 (0.321)	0.176 (0.321)	0.183 (0.322)
Class proportion Asian females	--	0.287 (0.316)	0.670 (0.287)*	0.677 (0.288)*	0.631 (0.289)*
Class proportion white males	--	(base)	(base)	(base)	(base)
Class proportion white females	--	0.049 (0.174)	0.030 (0.163)	0.027 (0.164)	0.030 (0.164)
Class proportion other ethnicity males	--	0.232 (0.277)	0.216 (0.245)	0.219 (0.243)	0.202 (0.247)
Class proportion other ethnicity females	--	0.727 (0.284)*	0.876 (0.273)**	0.879 (0.272)**	0.876 (0.273)**
Student-level fixed effects	yes	yes	yes	yes	yes
Constant	-0.070 (0.014)**	-0.344 (0.551)	-0.396 (0.518)	-0.395 (0.519)	-0.284 (0.519)
Observations	3094	3094	3094	3094	3094
R-squared	0.77	0.77	0.78	0.78	0.78
Note: Only “switchers” surveyed in multiple classes with 10-50 students per class are included. All columns include student-level fixed effects. Explanatory indices 1 through 7 measure the mean of classmates’ responses, omitting the student’s own response. Robust standard errors in parentheses, adjusted for clustering by classroom. * significant at 5%; ** significant at 1%					

Table 6
 Multiple regression results for **AMBITIOUSNESS** (z)
 e.g., “One of my goals in this class has been to learn as much as I can.”
 (See note below.)

	(1)	(2)	(3)	(4)	(5)
CLASSROOM CONDITIONS:					
1. <i>Advanced Class (0,1)</i>	0.425 (0.037)**	0.448 (0.042)**	0.205 (0.038)**	0.208 (0.038)**	0.210 (0.038)**
2. <i>Class is Focused on High Goals (z)</i>	--	--	0.355 (0.068)**	0.373 (0.068)**	0.443 (0.062)**
3. <i>Skillfully Responsive Teaching (z)</i>	--	--	0.186 (0.055)**	0.156 (0.058)**	--
4. <i>Enjoyable Lessons (z)</i>	--	--	--	0.061 (0.061)	0.122 (0.057)*
5. <i>Challenging Lessons (z)</i>	--	--	0.351 (0.052)**	0.361 (0.053)**	0.347 (0.053)**
6. <i>Relevant Lessons (z)</i>	--	--	0.169 (0.057)**	0.158 (0.059)**	0.182 (0.058)**
7. <i>Positive Behavior Climate (z)</i>	--	--	0.056 (0.057)	0.038 (0.060)	0.073 (0.058)
Classmates' Mean SES (s.d.=.20)	--	0.047 (0.258)	0.116 (0.235)	0.117 (0.234)	0.057 (0.234)
Class proportion black males	--	-1.354 (0.396)**	-0.710 (0.343)*	-0.702 (0.341)*	-0.729 (0.340)*
Class proportion black females	--	0.563 (0.320)	0.832 (0.282)**	0.841 (0.281)**	0.844 (0.280)**
Class proportion Hispanic males	--	0.233 (0.387)	0.220 (0.316)	0.202 (0.318)	0.169 (0.318)
Class proportion Hispanic females	--	-0.105 (0.324)	-0.351 (0.300)	-0.368 (0.300)	-0.414 (0.296)
Class proportion Asian males	--	-0.750 (0.511)	-0.882 (0.451)	-0.896 (0.452)*	-0.882 (0.448)*
Class proportion Asian females	--	-0.280 (0.503)	0.394 (0.387)	0.367 (0.387)	0.290 (0.388)
Class proportion white males	--	(base)	(base)	(base)	(base)
Class proportion white females	--	-0.269 (0.217)	-0.191 (0.194)	-0.178 (0.194)	-0.172 (0.193)
Class proportion other ethnicity males	--	0.885 (0.355)*	0.893 (0.315)**	0.879 (0.315)**	0.852 (0.316)**
Class proportion other ethnicity females	--	-0.157 (0.378)	0.292 (0.346)	0.283 (0.347)	0.280 (0.347)
Student-level fixed effects	yes	yes	yes	yes	yes
Constant	-0.226 (0.021)**	-0.310 (0.826)	-0.521 (0.744)	-0.525 (0.742)	-0.337 (0.742)
Observations	3095	3095	3095	3095	3095
R-squared	0.70	0.70	0.73	0.73	0.73

Note: Only “switchers” surveyed in multiple classes with 10-50 students per class are included. All columns include student-level fixed effects. Explanatory indices 1 through 7 measure the mean of classmates’ responses, omitting the student’s own response. Robust standard errors in parentheses, adjusted for clustering by classroom. * significant at 5%; ** significant at 1%

Table 7
 Multiple regression results for **DILIGENCE** (z)
“I have pushed myself hard to completely understand my lessons in this class.”
 (See note below.)

	(1)	(2)	(3)	(4)	(5)
CLASSROOM CONDITIONS:					
1. <i>Advanced Class (0,1)</i>	0.201 (0.029)**	0.234 (0.034)**	0.116 (0.034)**	0.123 (0.033)**	0.123 (0.033)**
2. <i>Class is Focused on High Goals (z)</i>	--	--	0.131 (0.070)	0.186 (0.070)**	0.184 (0.059)**
3. <i>Skillfully Responsive Teaching (z)</i>	--	--	0.086 (0.058)	-0.004 (0.062)	--
4. <i>Enjoyable Lessons (z)</i>	--	--	--	0.183 (0.057)**	0.182 (0.052)**
5. <i>Challenging Lessons (z)</i>	--	--	0.170 (0.049)**	0.201 (0.050)**	0.201 (0.050)**
6. <i>Relevant Lessons (z)</i>	--	--	0.040 (0.049)	0.010 (0.049)	0.009 (0.048)
7. <i>Positive Behavior Climate (z)</i>	--	--	0.186 (0.048)**	0.131 (0.050)**	0.131 (0.048)**
Classmates' Mean SES (s.d.=.20)	--	-0.260 (0.232)	-0.348 (0.221)	-0.344 (0.217)	-0.343 (0.217)
Class proportion black males	--	-1.202 (0.324)**	-0.844 (0.316)**	-0.824 (0.313)**	-0.824 (0.312)**
Class proportion black females	--	0.172 (0.312)	0.300 (0.289)	0.325 (0.286)	0.325 (0.286)
Class proportion Hispanic males	--	-0.249 (0.383)	-0.300 (0.370)	-0.348 (0.367)	-0.347 (0.368)
Class proportion Hispanic females	--	-0.049 (0.304)	-0.288 (0.301)	-0.339 (0.298)	-0.337 (0.298)
Class proportion Asian males	--	-0.301 (0.443)	-0.414 (0.418)	-0.446 (0.413)	-0.446 (0.413)
Class proportion Asian females	--	-0.795 (0.449)	-0.384 (0.400)	-0.464 (0.398)	-0.463 (0.399)
Class proportion white males	--	(base)	(base)	(base)	(base)
Class proportion white females	--	-0.321 (0.215)	-0.325 (0.210)	-0.291 (0.208)	-0.291 (0.208)
Class proportion other ethnicity males	--	0.178 (0.332)	0.248 (0.317)	0.210 (0.315)	0.211 (0.316)
Class proportion other ethnicity females	--	-0.255 (0.348)	-0.080 (0.331)	-0.107 (0.328)	-0.107 (0.328)
Student-level fixed effects	yes	yes	yes	yes	yes
Constant	-0.082 (0.016)**	0.882 (0.751)	1.136 (0.708)	1.123 (0.695)	1.118 (0.697)
Observations	3062	3062	3062	3062	3062
R-squared	0.72	0.72	0.73	0.73	0.73
Note: Only “switchers” surveyed in multiple classes with 10-50 students per class are included. All columns include student-level fixed effects. Explanatory indices 1 through 7 measure the mean of classmates’ responses, omitting the student’s own response. Robust standard errors in parentheses, adjusted for clustering by classroom. * significant at 5%; ** significant at 1%					

Table 8
 Multiple regression results for **INTELLECTUAL GROWTH** (z)
“This class makes me a better thinker.”
 (See note below.)

	(1)	(2)	(3)	(4)	(5)
CLASSROOM CONDITIONS:					
1. <i>Advanced Class (0,1)</i>	0.520 (0.067)**	0.502 (0.064)**	0.233 (0.065)**	0.200 (0.062)**	0.204 (0.063)**
2. <i>Class is Focused on High Goals (z)</i>	--	--	0.373 (0.126)**	0.237 (0.138)	0.422 (0.111)**
3. <i>Skillfully Responsive Teaching (z)</i>	--	--	0.096 (0.095)	0.349 (0.118)**	--
4. <i>Enjoyable Lessons (z)</i>	--	--	--	-0.426 (0.120)**	-0.282 (0.099)**
5. <i>Challenging Lessons (z)</i>	--	--	0.229 (0.082)**	0.178 (0.081)*	0.165 (0.084)
6. <i>Relevant Lessons (z)</i>	--	--	0.256 (0.096)**	0.275 (0.095)**	0.341 (0.096)**
7. <i>Positive Behavior Climate (z)</i>	--	--	0.128 (0.091)	0.260 (0.105)*	0.308 (0.110)**
Classmates' Mean SES (s.d.=.20)	--	0.473 (0.573)	1.049 (0.470)*	1.077 (0.464)*	0.858 (0.471)
Class proportion black males	--	0.014 (0.924)	0.379 (0.709)	0.297 (0.679)	0.232 (0.693)
Class proportion black females	--	-0.019 (0.745)	0.325 (0.581)	0.251 (0.566)	0.173 (0.577)
Class proportion Hispanic males	--	0.031 (0.760)	0.035 (0.593)	0.075 (0.571)	-0.006 (0.585)
Class proportion Hispanic females	--	0.701 (0.665)	0.274 (0.527)	0.280 (0.504)	0.148 (0.508)
Class proportion Asian males	--	0.215 (1.069)	-0.264 (0.796)	-0.404 (0.777)	-0.393 (0.783)
Class proportion Asian females	--	-0.943 (0.868)	-0.410 (0.607)	-0.292 (0.598)	-0.431 (0.600)
Class proportion white males	--	(base)	(base)	(base)	(base)
Class proportion white females	--	0.758 (0.816)	0.366 (0.630)	-0.029 (0.647)	0.195 (0.642)
Class proportion other ethnicity males	--	-0.036 (0.875)	-0.518 (0.787)	-0.731 (0.782)	-0.709 (0.791)
Class proportion other ethnicity females	--	0.995 (1.029)	0.571 (0.910)	0.587 (0.881)	0.588 (0.895)
Student-level fixed effects	yes	yes	yes	yes	yes
Constant	-0.255 (0.039)**	-1.825 (1.951)	-3.318 (1.468)*	-3.265 (1.443)*	-2.632 (1.473)
Observations	1183	1183	1183	1183	1183
R-squared	0.68	0.68	0.72	0.72	0.72
Note: Only “switchers” surveyed in multiple classes with 10-50 students per class are included. All columns include student-level fixed effects. Explanatory indices 1 through 7 measure the mean of classmates’ responses, omitting the student’s own response. Robust standard errors in parentheses, adjusted for clustering by classroom. * significant at 5%; ** significant at 1%					