The Advanced Placement Arms Race and the Reproduction of Educational Inequality

JOSHUA KLUGMAN

Temple University

Background: *Access to Advanced Placement (AP) courses is stratified by class and race. Researchers have identified how schools serving disadvantaged students suffer from various kinds of resource deprivations, concluding that interventions are needed to equalize access to AP courses. On the other hand, the theory of Effectively Maintained Inequality (EMI) argues that schools serving advantaged students may perpetuate inequalities by expanding their AP curriculum so their graduates can be competitive in the college admissions process.*
Research Questions: *Between 2000 and 2002, California attempted to expand AP offerings and enrollments. This study answers whether or not this intervention narrowed inequalities in AP along class and racial lines. It also examines if community affluence affects district officials' views of pressures to offer AP courses, which could explain any effectively maintained inequalities in AP access.*
Research Design: *This study uses a panel dataset of all California public high schools from 1997 to 2006. It examines the changing effects of school poverty, upper-middle class presence, and school racial composition on offerings of and enrollments in AP subjects. It supplements the quantitative analysis with interviews from 11 school district officials in California conducted in 2006.*
Results: *Hierarchical generalized linear models show that upper-middle class presence structures California high schools' AP subject offerings and enrollments, much more than school poverty. California's intervention resulted in increased AP subject offerings and enrollments in high schools serving disadvantaged and less advantaged students, but these reductions in deprivation had trivial effects on inequalities, since schools serving advantaged students increased their own AP offerings and enrollments. In addition, high schools serving White and Asian students had larger increases in AP offerings and enrollments than high schools serving Black and Hispanic students. Interview data indicate that officials in affluent dis-*

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tricts perceived a greater demand for AP subjects, and were more likely to report their school staff was proactive to initiate new AP courses than officials in districts serving working-class communities.

Conclusions: *The findings document that while policies can increase AP access at schools serving low-income students, the actions of affluent schools and families will pose substantial barriers to achieving parity in AP offerings and enrollments. Moreover, studies gauging resource inequalities among schools may underestimate these inequalities if they use school poverty to measure schools' socioeconomic composition.*

In the United States, inequalities in opportunities to learn high-level curricular content are stark reminders that equality of educational opportunity has yet to be achieved. Schools serving students from low-income families have fewer opportunities to learn advanced content (Mickelson, 1980; Mickelson & Everett, 2008; Schmidt, Cogan, Houang, & McKnight, 2011). This study focuses on one type of high-level curricular content, the Advanced Placement (AP) program, which ostensibly offers standardized, college-level material. Understanding why some schools offer more of these advanced courses, and have higher enrollments in them, is important because these courses influence future educational achievements and attainments (Engberg & Wolniak, 2010).

Much research on educational inequalities rests on what I refer to as a *resource deprivation* framework, which argues that constraints on disadvantaged families and their schools pose barriers to low-SES students, Black students, and Latino students from accessing educational opportunities. Increasing advanced courses at their schools should narrow inequalities in opportunities to learn.

On the other hand, there is reason to believe that inequalities are "effectively maintained" (Lucas, 2001) and are resistant to interventions targeting resources at disadvantaged schools. This is because enrolling in high-level curriculum is not just an "opportunity to learn" but also an opportunity to earn marks of distinction—achievements (academic or otherwise) valued by prestigious gatekeepers such as college admissions officers. To maintain their competitive edge, students from advantaged groups, such as high-SES families, will pursue an increasing number of distinctions, a dynamic that their schools facilitate. While opportunities to learn may increase among schools serving disadvantaged populations, they will increase at the same rate—or at a higher rate—at schools serving advantaged students.

This study examines the generation and maintenance of inequalities in schools' AP subject offerings and enrollments in the state of California. It uses quantitative data covering the years 1997-2006 to trace inequalities

in AP subjects, and qualitative interview data with district officials to gauge their perceptions of the push to offer more AP subjects. Ultimately, it shows that the state's attempt to promote access to AP subjects conflicted with dynamics that preserved—and in some cases, generated—class and racial inequalities in schools' AP offerings and enrollments.

Some argue that focusing on inequalities in AP access is counterproductive, since students who have less access to AP courses are also those who are less likely to succeed in those courses. According to this argument, the heart of the problem is inequality in the availability of rigorous curricula at earlier stages in educational careers (Dougherty & Mellor, 2010; Klopfenstein & Thomas, 2010; although see Iatarola, Conger, & Long, 2011, p. 17, for a counterargument). While there may be truth to this argument, inequalities in AP access are worthy of study because they reveal a dynamic process of advantaged families and their schools acquiring more opportunities for marks of distinction. This process leads to redefining upwards the standards of merit used to evaluate students and schools. At one point in time, taking a single AP subject was considered a mark of distinction that entitled one to enroll in a selective college. Evidence indicates this is not the case anymore—enrolling in multiple AP courses, and excelling on their associated exams is now distinctive (Schneider, 2009). This makes it harder for students from disadvantaged backgrounds to achieve a level of distinction comparable to those from upper-middle class families (Alon, 2009; Bastedo & Jaquette, 2011).

THE PUSH FOR EQUALIZING ACCESS TO ADVANCED CURRICULUM

Policymakers, educational researchers, and opinion leaders commonly agree that achieving parity in access to high-level content is desirable. Researchers have argued for universal offerings of algebra in middle schools (Gamoran & Hannigan, 2000; Raudenbush, Fotiu, & Cheong, 1998), and some even go beyond advocating universal access to college-level curriculum in high schools (i.e., Advanced Placement courses). The *Washington Post* runs annual rankings of all local high schools based solely on the ratio of Advanced Placement and International Baccalaureate tests taken to the number of graduating seniors. In 2009, the U.S. Department of Education exhorted public schools to use stimulus funds to expand their AP programs, as well as to help prepare struggling students for the rigor of these classes (U.S. Department of Education, 2009). Disadvantaged groups have pushed for these courses as well. In 1999, a group of parents of high school students in the nearly all-minority school district of Inglewood sued the state of California (*Daniel v. State of*

California); their complaint rested on the fact that while their local high schools offered only 2 to 3 AP courses, nearby high schools serving affluent families offered 14 to 18.

The lawsuit spurred the state to increase the AP offerings of high schools, particularly those schools that offered a limited number of AP subjects. The state legislature and governor allocated money for ostensibly four-year long "AP Challenge Grants" that were awarded to 61% of all high schools, to be used for teacher training, instructional materials, and tutoring.[1] The state also allocated additional money to the Advancement via Individual Determination (AVID) program for supporting the AP curriculum through teacher training and tutoring. Finally, California spent money on the University of California College Preparatory Initiative (UCCP) to implement online AP courses for schools where small sizes and low demand made it impractical to offer AP classes.[2] Due to budget constraints, these interventions were short-lived—the AP Challenge Grants were ended after only three years, and the funds for AVID and UCCP also eroded after two and three years, respectively.

A RESOURCE DEPRIVATION PERSPECTIVE

Many researchers examining curricular inequalities—including inequalities in the Advanced Placement curriculum—share a resource deprivation perspective (Conger, Long, & Iatarola, 2009; Corcoran, Evans, Godwin, Murray, & Schwab, 2004; Iatarola et al., 2011; Klopfenstein, 2004; Raudenbush et al., 1998; Roscigno, Tomaskovic-Devey, & Crowley, 2006). They view high-level curricula as opportunities to learn and argue that inequalities in access to high-level curricula result from disadvantaged families' and schools' limited resources, be they material resources (e.g., schools' funding) or immaterial resources (e.g., student's academic preparation, cultural capital, or social capital). These resource constraints affect *offerings* through school-level processes, such as school officials' perceptions of demand for these courses and their students' ability to succeed in them (Iatarola et al., 2011; Spade, Columba, & Vanfossen, 1997). These constraints affect *enrollments* both through school-level processes and individual-level processes. School-level processes are involved since enrolling in AP courses in a high school is contingent on the school offering those courses. However, even in schools that have a broad AP program, individual-level influences still matter for course-taking patterns. Students from low-SES families are less likely to enroll in these courses (Conger et al., 2009; Crosnoe & Schneider, 2010), owing to disadvantages in academic preparation, fewer perceived opportunities for upward mobility, or less confidence to assert their rights to advanced

coursework (Conger et al., 2009; Demareth, 2009; Roscigno et al., 2006; Useem, 1992). Researchers in the resource deprivation framework acknowledge that eliminating educational inequalities is not just a matter of targeting material and curricular resources as schools and individuals (e.g., Allensworth, Nomi, Montgomery, & Lee, 2009; Crosnoe & Schneider, 2010). However, their framework implies that making it easier for schools to offer AP courses will result in at least some narrowing of inequalities in subject offerings and enrollments.

AN EFFECTIVELY MAINTAINED INEQUALITY PERSPECTIVE

Studies in the resource deprivation perspective are invaluable in helping policymakers and scholars realize the barriers to equalizing access to high-level curricular content. However, starting in the 1990s researchers began to study the resiliency of educational inequalities in the face of egalitarian reforms (e.g., Shavit & Blossfeld, 1993). This culminated in Lucas's (2001, p. 1652) theory of "Effectively Maintained Inequalities" (EMI) which argued that "socioeconomically advantaged actors secure for themselves and their children some degree of advantage wherever advantages are commonly possible." This theory allows for advantaged actors securing *quantitative* educational advantages (such as years of schooling) or *qualitative* advantages (namely, type of schooling). Lucas applied his EMI thesis to tracking in U.S. high schools and argued that a crucial mechanism underlying EMI dynamics are parental pressures on school officials to provide educational opportunities for their children. Since parents' ability to influence school officials varies by class, large socioeconomic differentials in track location are produced. Subsequent studies documented how inequalities in qualitative distinctions among students can persist (and sometimes even grow) despite the equalization of quantitative distinctions among students (Alon, 2009; Ayalon & Shavit, 2004; Bolivar, 2011). In the context of the AP program, enrollment in AP courses and scoring well on AP exams are not just opportunities to learn (as the resource deprivation perspective views them), but are also marks of distinction signifying qualitative differences among students who have achieved the same quantitative level of education (a high school diploma).

The fact that AP courses are marks of distinction valued by selective colleges (Geiser & Santelices, 2006; National Research Council, 2002) is an outcome of two processes. First, selective colleges, acting on their own institutional interests, define the basic contours of what is considered meritorious achievement. In order to retain their prestige and legitimacy, selective colleges will emphasize academic achievement in their admis-

sions decisions (L. Kilgore, 2009). Second, prospective students, particularly those from affluent families, will adapt their behaviors to fulfill the criteria of selective colleges (Alon, 2009). Researchers argue that as selective colleges face an increasing number of qualified applicants, they naturally respond by selecting those students who are superior in academic performance (Alon, 2009; Hoxby, 2009) as well as those students who can present a coherent and unique narrative about themselves and their abilities (Stevens, 2007).[3] As I will discuss later, AP courses, particularly the newer ones, may help students formulate such unique narratives that help them stand out.

In reaction to changes in selective colleges' criteria, students aspiring to attend such colleges will adapt (Alon, 2009) and increase their own marks of distinction, including enrolling in a higher number of AP courses (Schneider, 2009), resulting in an "Advanced Placement arms race" (Davenport, 2006). In short: the marks of distinction required to be certified as an academically successful student deserving admission to a selective college is continually upgraded. This effectively maintains inequality, as the upgrading makes it more difficult for students of disadvantaged origins to reach parity in marks of distinction.

Prior research has documented EMI processes in individual educational attainments (Alon, 2009; Ayalon & Shavit, 2004; Bolivar, 2011; Lucas, 2001), and this study tests whether or not they occur for curricular differences *between* high schools. Schools serving affluent communities have an interest in keeping their schools attractive to middle- and upper-class families, maintaining the prestige and status of their communities (Logan & Schneider, 1981; Mintrom, 1993; Peterson, 1981). Because of the perpetual upgrading of academic standards for students aspiring to selective colleges, it is expected that affluent families will come to demand more and more AP offerings from their schools, and children in those families will enroll in more of these courses. California's intervention to equalize AP access should barely affect (if at all) the socioeconomic gradients in schools' AP offerings and enrollments.

It is even possible that AP inequalities will *grow*, particularly in newer AP subject offerings and enrollments (e.g., human geography and statistics). These are not necessarily more rigorous or prestigious than more traditional AP subjects (e.g., English literature and physics), but adding them to the curriculum expands the menu of choices that give students more flexibility to package their marks of distinction to colleges. Students seeking to pursue relatively novel courses of study (facilitating perceptions of them as unique) would benefit from this flexibility. Another group of students who would benefit are academically weaker students

who cannot excel in the traditional AP subjects. Ayalon and Yogev (2005), for example, found that EMI processes can thwart expansions to educational opportunities when socioeconomically advantaged but academically less successful students are quick to take advantage of them. In short, advantaged students and their parents will pressure their schools to offer the newest and latest advanced coursework in legitimate subjects for the sake of a broader menu of educational distinctions. For this study's purposes, these are AP subjects recently rolled out by the College Board, the organization overseeing the AP curriculum. Hence, class and racial inequalities in these latest subjects are expected to grow faster than inequalities in older, established subjects.

PREVIOUS RESEARCH

Many studies on inequalities in Advanced Placement rely on cross-sectional data, and document that schools serving poor students and minority students tend to offer fewer AP subjects (Corcoran et al., 2004; Darity, Castellino, Tyson, Cobb, & McMillen, 2001; Iatarola et al., 2011; Roscigno et al., 2006). Only a few studies used longitudinal data to examine effects of state interventions to expand access to AP courses. Klopfenstein (2004) analyzed inequalities in AP course offerings in high schools in 1994 and 2000 in Texas, as did Zarate and Pachon (2006) for California high schools in 1997 and 2003.[4] Klopfenstein's results showed that while schools with a high presence of low-income students dramatically increased their AP offerings, inequalities by school socioeconomic composition grew from 1994 to 2000—schools with a small low-income presence managed to increase their AP offerings even more over the time period. Zarate and Pachon (2006) have similar findings. Conger et al. (2009) examined student enrollments in AP courses in Florida from 2002 to 2005, and found that disparities by student race and poverty status worsened over time, with advantaged students' likelihood of enrollment increasing at a faster rate than disadvantaged students. This was the case even though Florida was partnering with the College Board to increase AP access though teacher training and incentives for teachers to take on AP assignments.

These studies improve our understanding of the dynamics of AP inequalities, and show that EMI is applicable to them. However, their resource deprivation perspective leaves important issues unaddressed. First, all of these studies use student poverty (or eligibility for free/reduced price lunches) to measure student socioeconomic status or school socioeconomic composition, even though the presence of disadvantage is not the same thing as the absence of advantage (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993). Effectively Maintained Inequality

directs researchers to examine the actions and behaviors of advantaged actors, and prior studies focusing on student or school poverty are potentially neglecting important dimensions of inequality. A second issue that has yet to be addressed is the extent to which inequalities in older and newer AP subjects differ. As outlined above, it is very plausible the novelty of the newer subjects means that advantaged families and their schools are more likely to exploit them once they become available.

Zarate and Pachon (2006) analyzed the effects of the intervention in California. In addition to relying on measures of school poverty and not distinguishing between older and newer AP subjects, other aspects of their analysis prevent it from answering questions this study focuses on. Their analysis potentially underestimates the effectiveness of California's intervention because their data excluded online AP courses that were supported by California's efforts, a problem this study remedies. Second, Zarate and Pachon (2006) analyzed inequalities in the 1997-1998 and 2003-2004 school years, and thus they cannot address what happened to inequalities when the intervention was in full swing (from the 2000-2001 through the 2002-2003 school years), nor in an extended period of time after California retrenched its AP expansion efforts.

METHODS

This study uses a mixed-methods approach. I test hypotheses about inequalities in old and new AP subject offerings and enrollments with quantitative analyses. I also use data from in-depth interviews with a handful of school officials in California to determine whether or not the pressures propelling schools to offer AP subjects (namely parental and student demand) vary by district socioeconomic composition. EMI theory identifies these pressures as a key mechanism for the persistence of inequalities in educational opportunities. In addition, the data from the in-depth interviews will be used to explain unexpected findings in the statistical analysis.

STATISTICAL ANALYSIS

This study uses a panel dataset of California high schools, with annual observations of schools from 1997-2006. The dataset was constructed using information on schools that (a) report having non-zero enrollment in grades 11 and 12, and (b) are not classified as special schools, such as alternative, continuation, special education, or county-run schools. After the dataset was constructed, there were 10,196 school observations nested in 1,302 schools that were nested in 461 districts; after dropping observations with missing values, there are 10,135 school-observations nested in

1,290 schools that were nested in 456 districts. Of all schools, 65% had data for all 10 years. For the schools with less than 10 years of data, 86% were established after 1997 and 3% were closed down before 2006. Table 1 presents summary statistics of all variables used in the analyses.

Table 1. Summary Statistics

Variable	M	SD
Outcomes		
AP Subjects	6.34	4.64
Old AP Subjects	5.87	4.25
New AP Subjects	0.47	0.7
AP Enrollments	294.86	332.7
Old AP Enrollments	271.82	302.25
New AP Enrollments	23.05	51.53
AP Enrollments Per 100 Students	16.75	49.37
Old AP Enrollments Per 100 Students	15.51	48.97
New AP Enrollments Per 100 Students	1.24	3.06
Predictors		
School-Year Level (10,135 observations)		
Proportion Impoverished	0.33	0.25
Proportion Black	0.08	0.12
Proportion Hispanic	0.35	0.26
Enrollment (1000s)	1.59	1.06
Log enrollment	0.178	1.311
School-Level (1,290 schools)		
Charter School	0.2	—
District-Level (456 districts)		
Upper-Middle-Class	0.28	0.14
Suburb	0.64	—
City	0.13	—
Rural	0.18	—

The analysis ends at the 2006-2007 school year for practical reasons. Starting in the 2007-2008 school year, UCCP went "open-access" and made their course materials available to school districts. The decentralization of online courses makes it difficult to obtain a full accounting of what AP subjects are offered in schools.

OUTCOMES

The outcomes analyzed are the number of unique AP subjects offered (*offerings*), and the number of *enrollments* in AP courses, in each high

school.[5] This study distinguishes between "old" AP subjects (27 subjects that were introduced by the College Board before the study period; the most recent of these is AP Psychology, introduced in 1992) and "new" AP subjects (subjects introduced during the study period, in 1997 or later; this consists of statistics, environmental science, human geography, world history, Chinese, Italian, and Japanese).

The bulk of the data for this variable came from the California Basic Educational Data System (CBEDS) maintained by the California Department of Education. This database contains the teaching assignments for every teacher in California's public schools, as well as the enrollments in these classes. This database poorly covers AP subjects that were offered through the UCCP program (of the 1,941 AP courses taught through the UCCP from 1999 to 2006, only 527 were recorded in the CBEDS data). This is remedied by supplementing the CBEDS data with information on the AP subjects UCCP covered in each school each year from 1999 (when the UCCP started online AP courses) to 2006.[6]

PREDICTORS

To measure the *upper-middle class presence* in a district, data from the 2000 Census School District Tabulation are used. The percent of employed civilians who work in professional or managerial occupations, and the percent of adults who have a baccalaureate or higher degree are scaled (= .95). Because this variable is only available from the 2000 Census, it is static and does not vary over time. The presence of Black, Hispanic, and impoverished students is measured using the Common Core of Data (CCD), which contains annual information on the racial composition of schools as well as the proportion of students who eligible for free or reduced price lunches. Since these variables are measured annually, they are time-varying.

Since this study uses 4 related measures of the presence of advantaged and disadvantaged populations in a school or district, multicollinearity is a potential concern. The strongest correlation among these four variables is .63 (between school poverty and school proportion Hispanic), followed by -.45 (between school poverty and district upper-middle class presence, and between school proportion Hispanic and district upper-middle class presence). It is noteworthy that the correlation between poverty and upper-middle class presence is strong, but not so strong as to indicate that these variables are part of the same construct. Appendix A presents the results for modeling separately the effects of upper-middle class presence, school poverty, and school racial composition (proportion Black and proportion Hispanic). The results are substantially similar

to those presented in the main tables, when all of these variables are simultaneously controlled for, indicating that multicollinearity is not an issue. The major differences are that the negative effects of the presence of Black and Hispanic students in schools are substantially attenuated after controlling for school poverty and upper-middle class presence, indicating that some, but not all, of the disadvantages accruing to minority schools are reducible to socioeconomic disadvantage.

TIME

Time is measured with dummy indicator variables for each year.[7] When time is interacted with sociodemographic variables, it is categorized into 5 periods: 2 pre-intervention periods (1997-1998 and 1999); the period where California implemented its interventions to expand schools' AP curricula (2000-2002); and two post-intervention periods (2003-2005 and 2006). There are two pre-intervention periods because 1999 was the first full year where California had a reimbursement program for AP exam fees, even though AP exam reimbursement programs are unlikely to have much of an effect on schools' AP subject offerings or enrollments (Klopfenstein, 2004). There are two post-intervention periods because exploratory analyses indicated that inequalities in access and enrollments increased from 2005 to 2006.

CONTROLS

This study controls for the school's charter status and metropolitan status (neither of which vary over time); with dummy indicators for *charter school* (with traditional public high schools as the reference); and *city* and *rural* location (with suburb as the reference category). The time-varying log *school size* is controlled for, since schools with more students can take advantage of the economies of scale to offer more unique AP subjects.

ANALYSES

Both outcomes—AP subject offerings and enrollments—are count outcomes and modeled using the multilevel analogue of negative binomial regression. When AP subject offerings are the outcome, all time-varying predictors (racial and poverty compositions and enrollment size) are lagged one year, since school administrators schedule courses in the prior school year. When AP enrollments are an outcome, contemporaneous measures of the time-varying predictors are used, and the number of students in grades 9-12 serves as an exposure variable, making the out-

come a rate. For the enrollment outcomes, this study compares the effects of sociodemographic predictors with and without controlling for AP subject offerings. This allows for examining the role of AP course offerings in the maintenance of inequalities in enrollments.

Since this study uses longitudinal data on schools which are nested in districts, to avoid problems with statistical inference that accompany clustered data, 3-level hierarchical generalized linear models (HGLM) are used, with school-observations at Level 1 (encompassing all variables that vary over time); schools at Level 2 (encompassing all static school characteristics); and districts at Level 3 (encompassing all static district characteristics). I present the population-averaged results with robust standard errors.

To clearly present the changing effects of socioeconomic and racial composition, the tables show only the main effects of these variables for the different time periods. The significance of changes in these effects (in other words, the significance of the time period interactions) is indicated with superscripts. The superscripts indicate if an effect significantly changed from the prior time period, and if an effect in 2006 (the second post-intervention period) is significantly different from the effect in the 2000-2002 intervention period.

Coefficients from count models refer to relative, not absolute differences. For example, a coefficient of 0.50 means that a unit increase in the predictor increases the count (or rate, in the case of enrollments) by 65% [exp (.5) - 1 = 0.65]. The expansion of the AP curriculum from 1997 to 2006 will produce situations where relative differences between schools will decrease, but the absolute differences between schools will grow.[8] When examining changes in AP inequalities over time, the discussion will place more weight on absolute differences between predicted counts, which is in line with prior research which assumes that the benefits of the number of AP courses or exams on student outcomes take on a linear form (Engberg & Wolniak, 2010; Geiser & Santelices, 2006; Roscigno et al., 2006). On the other hand, since there are so few new AP subjects compared to old AP subjects (6 versus 27), it will not be surprising that absolute gaps in old subjects are much larger than gaps in new subjects; consequently, when comparing inequalities between old and new subjects, I will give more weight to the HGLM coefficients.

INTERVIEWS

In the spring of 2006 I conducted semi-structured interviews with 11 officials from a variety of school districts in California. Nine were conducted in person (and transcribed); two were conducted over the phone (notes

were taken immediately after the interview). The districts were selected from a single metropolitan area, and I sought to have a variety of districts in terms of class composition and AP offerings. These 11 officials represent eight different school districts: five districts serving predominantly upper-middle class families (five superintendents and one school board member); two districts serving communities with a relatively small upper-middle class presence (two superintendents and one school board member); and one large central-city district (two school board members). Most of the interviews ran 30-45 minutes each. When I approached prospective informants, I told them I wanted to interview them about the difficulties they had in obtaining resources they needed, such as AP subjects. Information about each district is presented in Table 2. To protect the confidentiality of my informants, districts are identified with pseudonyms.

Table 2. Description of School Districts Where Informants Served

District	Average AP Subjects Per School	Upper-Middle Class Composition	Student Poverty	Percent Black	Percent Hispanic	Total High School Enrollment	Number of Schools	Interviewed
Bailey	15	60	1	1	5	5,001 to 10,000	2 to 5	Board member; superintendent
Greer	5	30	30	35	20	1,001 to 5,000	2 to 5	Board member; superintendent
La Mar Azul	10	70	10	10	10	0 to 1,000	1	Superintendent
Markham	10	60	10	1	10	5,001 to 10,000	2 to 5	Superintendent
Moffat	5	30	15	20	20	0 to 1,000	1	Superintendent
Musuraca	5	50	40	10	20	10,001 +	5 +	Two board members
Sterling	10	60	1	1	5	1,001 to 5,000	2 to 5	Superintendent
Tourneur	10	70	5	5	5	1,001 to 5,000	2 to 5	Superintendent

NOTE: To preserve informants' confidentiality, district names are pseudonyms and district statistics are rounded.

RESULTS

Table 3 shows the regression results for all four outcomes, and Figures 1-4 graph socioeconomic and racial inequalities for the entire 1997-2006 period. The figures show the predicted number of AP subject offerings (per school) and enrollments (per 100 students) for schools that are one standard deviation above and below the mean in the presence of the upper-middle class, impoverished students, Black students, and Hispanic students, but are average on all other predictors in the model.

Table 3. HGLM Analyses of AP Subjects and Enrollments

	Old AP Subjects	New AP Subjects	Old AP Enrollments		New AP Enrollments	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Proportion Upper-Middle-Class						
1997-1998	1.405 ***	1.097 *	1.304 ***	0.488 *	0.913	-0.926
	(0.200)	(0.634)	(0.359)	(0.255)	(0.822)	(0.816)
1999	1.469 ***	0.666	1.546 ***b	0.628 **	1.005	0.638 a
	(0.200)	(0.530)	(0.297)	(0.244)	(0.614)	(0.626)
2000-2002	1.034 ***a	0.565 *	1.717 ***	0.928 ***a	1.222 ***	0.981 ***
	(0.168)	(0.332)	(0.229)	(0.205)	(0.401)	(0.325)
2003-2005	0.897 ***b	0.515 *	1.655 ***	0.957 ***	0.993 ***	0.624 **
	(0.176)	(0.296)	(0.235)	(0.188)	(0.369)	(0.288)
2006	0.955 ***	1.528 ***ac	1.873 ***	1.170 ***	1.994 ***ad	0.406
	(0.211)	(0.286)	(0.275)	(0.250)	(0.360)	(0.353)
Proportion Impoverished Students						
1997-1998	-0.128	-0.428	-0.215 *	-0.278 **	-1.498 *	-1.469 **
	(0.130)	(0.656)	(0.235)	(0.121)	(0.909)	(0.580)
1999	-0.107	-0.354	-0.147	-0.123	-0.789	-0.808 **
	(0.099)	(0.458)	(0.160)	(0.110)	(0.539)	(0.363)
2000-2002	0.148 *a	0.244	0.047	0.036 a	-0.180	-0.113 b
	(0.086)	(0.185)	(0.103)	(0.094)	(0.317)	(0.244)
2003-2005	0.051	0.107	-0.021	0.035	0.002	-0.075
	(0.080)	(0.145)	(0.109)	(0.089)	(0.222)	(0.201)
2006	0.025	0.122	-0.018	0.026	-0.218	-0.374
	(0.134)	(0.159)	(0.140)	(0.026)	(0.364)	(0.296)
Proportion Black Students						
1997-1998	-0.175	-2.330 **	-0.234	-0.037	-0.141	1.969
	(0.267)	(1.095)	(0.581)	(0.299)	(1.644)	(1.217)
1999	-0.150	-1.720 **	-0.296	-0.077	-1.154	-0.491 a
	(0.366)	(0.793)	(0.450)	(0.215)	(1.291)	(0.728)
2000-2002	-0.581 a	-0.457	-0.597	-0.276	-0.527	0.287
	(0.370)	(0.400)	(0.448)	(0.233)	(0.466)	(0.416)
2003-2005	-0.646 *	-0.248	-0.660	-0.336	-0.708	-0.059
	(0.332)	(0.359)	(0.476)	(0.234)	(0.470)	(0.365)
2006	-0.572	-0.246	-0.788	-0.423	-0.728	-0.565 d
Proportion Hispanic Students						
1997-1998	0.000	-1.102 **	-0.616 **	-0.240 **	-2.027 ***	-1.058 **
	(0.134)	(0.551)	(0.170)	(0.110)	(0.716)	(0.535)
1999	0.018	-1.219 **	-0.500 ***	-0.215 *	-2.492 ***	-0.725
	(0.125)	(0.441)	(0.146)	(0.111)	(0.574)	(0.454)
2000-2002	-0.262 **a	-0.869 ***	-0.448 ***	-0.198 *	-1.188 ***a	-0.535 **
	(0.117)	(0.205)	(0.144)	(0.103)	(0.318)	(0.243)
2003-2005	-0.241 **	-0.839 ***	-0.442 ***	-0.218 **	-1.188 ***	-0.655 **
	(0.119)	(0.223)	(0.169)	(0.105)	(0.312)	(0.222)
2006	-0.225 *	-0.484 **ac	-0.451 ***	-0.159	-0.475 b	-0.165
	(0.118)	(0.207)	(0.167)	(0.103)	(0.421)	(0.387)

Table 3. HGLM Analyses of AP Subjects and Enrollments *(continued)*

	Old AP Subjects	New AP Subjects	Old AP Enrollments		New AP Enrollments	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Subjects						
1997-1998					0.145 ***	2.339 ***
					(0.008)	(0.121)
1999					0.138 ***[a]	1.823 ***[a]
					(0.009)	(0.089)
2000-2002					0.123 ***[a]	1.471 ***[a]
					(0.007)	(0.053)
2003-2005					0.118 ***	1.110 ***[a]
					(0.007)	(0.050)
2006					0.110 ***[ac]	0.946 ***[ac]
					(0.007)	(0.048)
Location (ref = Suburb)						
City	-0.017	-0.088	0.029	0.025	-0.082	-0.072
	(0.050)	(0.092)	(0.075)	(0.053)	(0.096)	(0.086)
Rural	-0.011	0.105	-0.150 *	-0.121	-0.042	-0.188
	(0.071)	(0.124)	(0.091)	(0.075)	(0.230)	(0.152)
Charter School	-0.754 ***	-0.790 ***	-0.363	-0.388 **	-0.467 **	-0.462 *
	(0.213)	(0.227)	(0.264)	(0.198)	(0.236)	(0.245)
Log Enrollment	0.658 ***	0.691 ***	0.097 *	-0.253 ***	0.223 ***	-0.277 ***
	(0.026)	(0.042)	(0.050)	(0.039)	(0.056)	(0.049)
Variance Components						
School-Level	0.264 ***	0.682 ***	0.279 ***	0.140 ***	0.782 ***	0.381 ***
District-Level	0.032 ***	0.334 ***	0.051 ***	0.019 ***	0.376 ***	0.132 ***

* p < .10 ** p < .05 *** p < .01

NOTE: Standard errors presented in parentheses. For AP subject models, poverty, race, and enrollment variables are lagged by one year. For AP enrollment models, poverty, race, and enrollment are contemporaneous. All models include controls for year indicators.

a. Effect is significantly different from effect in prior time period, $p < .05$

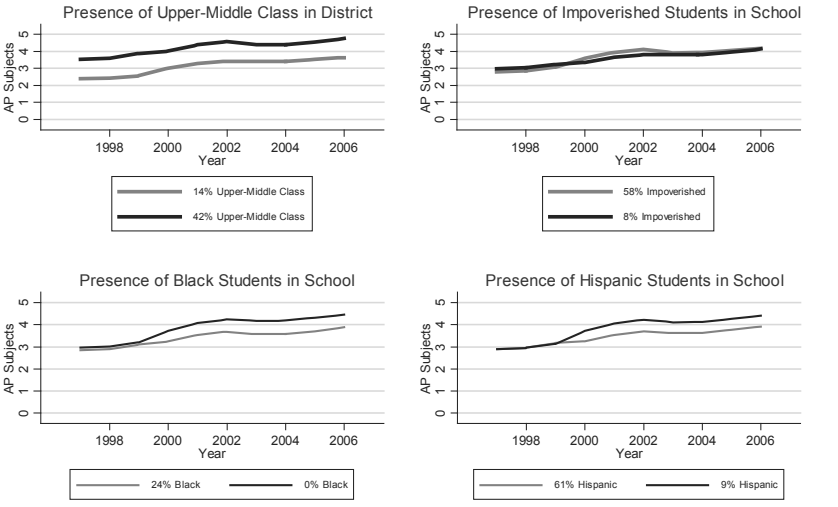
b. Effect is significantly different from effect in prior time period, $p < .10$

c. 2006 Effect is significantly different from 2000-2002 effect, $p < .05$

d. 2006 Effect is significantly different from 2000-2002 effect, $p < .10$

For both old and new subjects, the presence of the upper-middle class, and not the presence of poor students, best explains variation in subject offerings. For most time periods, a large upper-middle class presence results in more subject offerings (although the effect is only marginally significant from 1997 to 1998 and 2000 to 2005 for new AP subject offerings). This indicates that using poverty to measure schools' socioeconomic composition misses the main source of inequalities in AP subjects.[9]

Figure 1. Old AP Subjects



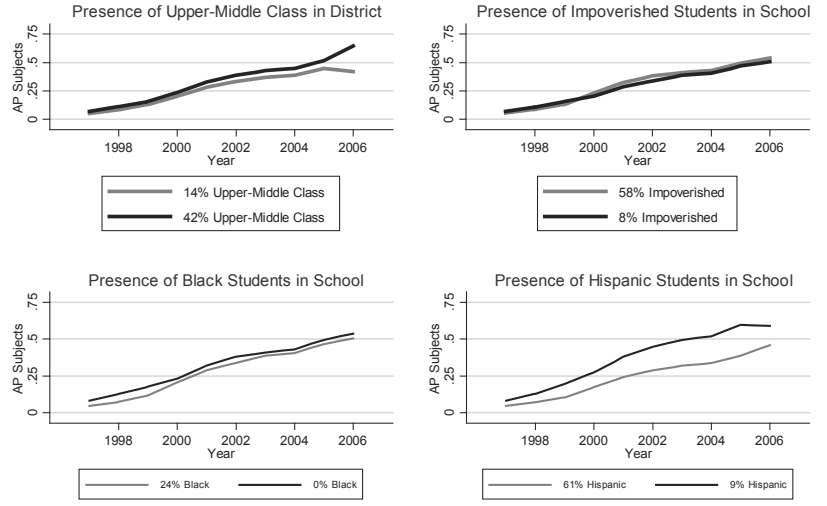
NOTE: Predicted old AP subject offerings calculated from coefficients presented in Model 1, Table 3.

Figure 1 reveals two notable findings. First, for old AP subject offerings, inequalities based on upper-middle class presence stays roughly the same (about 1.1 subjects) throughout the whole time period. The regression coefficients show the effect decreased substantially after 2000, but the absolute gap decreases by only a trivial amount. Inequalities in old AP subject offerings are lowest in the 2003-2005 period (about 1 subject), after the intervention. Figure 1 shows this decreased inequality was an outcome of a contraction that was more severe for upper-middle class schools than for schools serving students of less-advantaged origins. In other words, schools serving upper-middle class communities benefitted from California's interventions, allowing them to expand their old AP offerings, but when California ended their intervention the upper-middle class schools had problems maintaining their high levels of AP offerings, leading to a slight reduction in inequalities in old AP subject offerings.

The second notable finding is that by 2006, schools with a small upper-middle class presence were offering about the same number of old AP subject offerings as were schools with a large upper-middle class presence in 1997 (around 3.5). In other words, the school with a small upper-middle class presence would have "caught up" with the school with a large upper-middle class presence if the latter had not increased its own AP offerings. For new AP subjects, Figure 2 shows the upper-middle class

advantage remains very small up until 2006, when it jumps from an absolute gap of .07 subjects in 2005 to .23 subjects in 2006, a significant increase according to the regression results.

Figure 2. New AP Subjects



NOTE: Predicted new AP subject offerings calculated from coefficients presented in Model 2, Table 3.

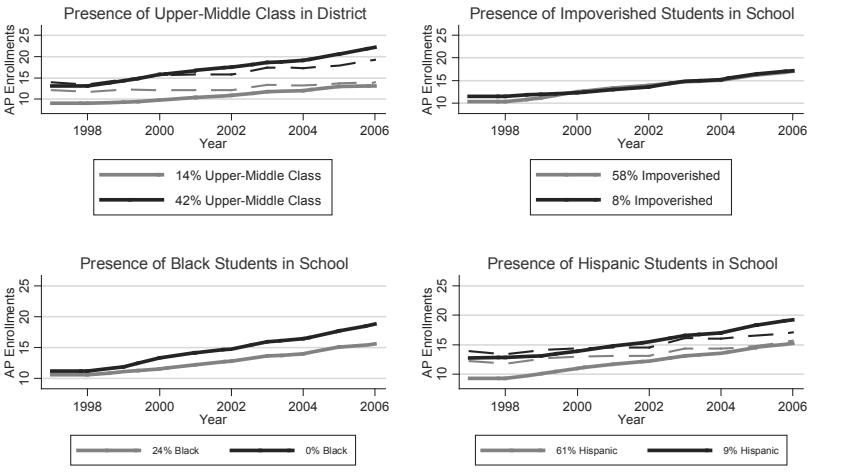
For race, these results offer some surprises. Racial inequalities in old AP subject offerings actually grow starting in 2000 (once California began its efforts to increase high schools' AP offerings) and remain stable up through 2006. In fact, the Black and Hispanic disadvantages in old AP subject offerings are not significant in the pre-intervention period, but become significant afterwards (although the effect of proportion Black only became significant at the .10 level in the 2003-2005 period).

For new AP subjects, there are significant Black and Hispanic disadvantages before 2000, although these are very small inequalities as they appear in Figure 2. The Black disadvantage remains small and becomes insignificant after 2000; the Hispanic disadvantage remains significant and the absolute gap between Hispanic schools and non-Hispanic schools grow over time (although there is some closing of the gap in 2006). In short, while minority schools' access to old and new AP subjects grew over time, overall the results show that access grew even larger in schools serving Whites and Asians. This is as EMI theory (and not the resource deprivation perspective) expects.

Turning to enrollments, the results are especially consistent with EMI.

The regressions again show that the presence of the upper-middle class drove inequalities in old AP subjects, with little effect of poverty.[10] Moreover, these effects grew over time, as illustrated by Figure 3. A school with a small upper-middle class presence had its enrollments grow from 9 to 13 per 100 students from 1997 to 2006; a school with a large upper-middle class presence had its enrollments increase from 13 to 22. As was the case for old AP subject offerings, the school serving the less advantaged students would have reached parity with the school serving advantaged parents by 2006 if enrollments in the latter school maintained at their original levels.

Figure 3. Old AP Enrollments Per 100 Students



NOTE: Solid lines are predicted old AP subject enrollments (per 100 students) calculated from coefficients presented in Model 3, Table 3. Dashed lines, calculated from coefficients presented in Model 4, Table 3, represent predictions after controlling for old AP subject offerings.

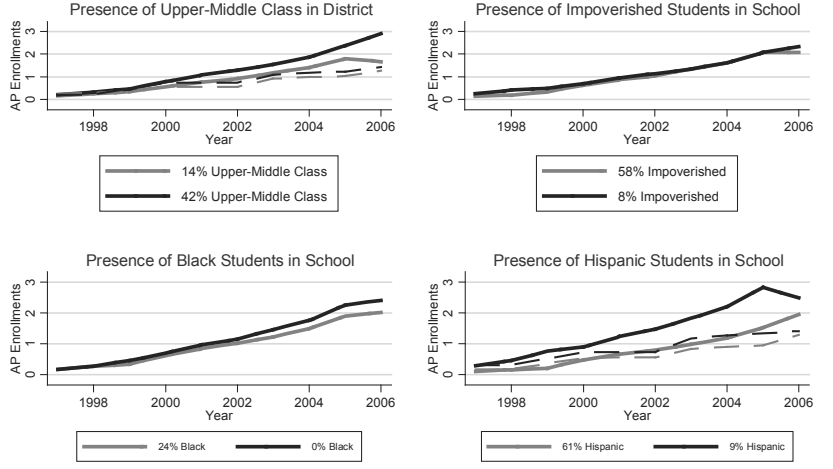
In Model 4, old AP subject offerings are controlled for, and while the effect of upper-middle class presence is smaller than it is in Model 3, it is still strong and grows over time. The dashed lines in Figure 3 represent predictions from Model 5; the gap between them represents inequalities for schools with the same number of AP subject offerings. The fact that the dashed lines increase over time, and that the gap between them also increases, indicates that even if schools did not grow their AP curriculum, enrollments in the AP courses would still grow, in particular in upper-middle class communities, effectively maintaining inequalities.

Schools with a large Hispanic presence were disadvantaged in their enrollments in old AP subjects. California's attempts to expand high

schools' AP offerings made no noticeable impact on this disadvantage, as shown by Figure 3 (on average, a 2-standard deviation difference in proportion Hispanic corresponds to a difference of about 3.4 enrollments per 100 students in old AP courses). The results show similar inequalities based on the presence of Black students, but these are not statistically significant.

Turning to enrollments in new AP subjects, Figure 4 shows inequalities based on upper-middle class presence starting out very small but gradually growing over time; in 2006, inequalities significantly, and sharply, grow. The effects of poverty and race on enrollments in new AP subjects are very similar to their effects on enrollments in old AP subjects. The exception is that there is some evidence that the negative effect of proportion Hispanic weakened substantially for enrollments in new AP subjects in the 2006 period.

Figure 4. New AP Enrollments Per 100 Students



NOTE: Solid lines are predicted new AP subject enrollments (per 100 students) calculated from coefficients presented in Model 5, Table 3. Dashed lines, calculated from coefficients presented in Model 6, Table 3, represent predictions after controlling for old AP subject offerings.

It was argued earlier that advantaged actors are quicker to secure new forms of distinction for their children in order to increase their menu of options for obtaining distinctiveness. Thus, inequalities should grow faster for newer AP subjects and enrollments than for older AP subjects and enrollments. Indeed, inequalities based on upper-middle class presence follow this pattern. For old AP subjects, the effect of upper-middle class presence declines gradually, from a regression coefficient of 1.41 to

.96, but for new AP subjects, the effect starts out at 1.1, shrinks to around half that in the 1999-2005 period, and then in 2006 sharply increases so it is 1.4 times the effect it was in the pre-intervention period. Inequalities grew for both old and new AP enrollments, but the growth was again faster for enrollments in new subjects (from .91 to 1.99) than for old subjects (from 1.30 to 1.87)

ECOLOGICAL INFERENCES AND AP INEQUALITIES BETWEEN STUDENTS

This study faces the problem of ecological inference on two levels. First, in the examination of AP subject offerings, upper-middle class presence is measured at the district level, leading to the inference that upper-middle class presence in schools leads to more AP subject offerings. However, another possibility is that within districts, schools serving advantaged families have fewer AP subject offerings, invalidating my ecological inference. This is rather unlikely, in light of evidence that intra-district inequalities in school resources favor schools with a larger advantaged (or smaller disadvantaged) student population (Condron & Roscigno, 2003; Rubenstein, Schwartz, Stiefel, & Amor, 2007). If anything, since these results use a district-level measure of advantaged populations, the estimated effects are conservative.

The second problem of ecological inference is that of inferring the effects of student characteristics on AP enrollments, based on district- and school-level predictors. Results from prior studies again indicate that if anything, the effects of socioeconomic status and race should be stronger at the student level than at the district or school level. A number of studies document that high schools serving advantaged populations tend to have more strict and exclusionary tracking policies (Kelly, 2009; Kelly & Price, 2011; S. B. Kilgore, 1991), including exclusionary practices regarding access to AP courses (Attewell, 2001), which likely create SES inequalities favoring students of upper-middle class origins. While it is possible that California's reforms affected school social organization to such an extent that within schools, disadvantaged students were more likely to enroll in AP courses than advantaged students, such a scenario is not plausible, especially considering evidence that upper-middle class parents will staunchly protect their children's educational advantages at the expense of children from less advantaged families (Cucchiara & Horvat, 2009; Demareth, 2009; Oakes, Wells, Jones, & Datnow, 1997; Wells & Serna, 1996). Moreover, the interview data (presented below) indicate that officials in upper-middle class districts are responsive to the prerogatives of upper-middle class families.

There is an unsettling implication of this. Consider enrollments in old and new AP courses as shown in Figures 4 and 5. In 2006, an "upper-middle class school" (a school 1 standard deviation above the mean in upper-middle class composition) would have 25.2 students per 100 enrolled in old and new AP courses. To put it another way, in 2006 there were 1.2 AP enrollments for every member of the senior class (on average, 21% of the student bodies in California high schools were seniors). Compare this school to a school that is 2 standard deviations lower on upper-middle class presence. In this school, there were 14.8 students per 100 enrolled in AP courses in 2006, or .7 enrollments for every member of the senior class.

Prior studies document that the distribution of AP enrollments are more unevenly distributed in the upper-middle class school, and more evenly distributed in the less affluent school (Attewell, 2001). In 2006, if one were to compare the AP course load of an average AP student in the upper-middle class school to that of an average AP student in a working-class school, the difference will probably be much bigger than is suggested by comparing 1.2 to .7 enrollments per member of the senior class.

SCHOOL OFFICIALS' PERCEPTIONS OF DEMAND FOR AP SUBJECTS

This study shows persistent gaps in school AP offerings and increasing gaps in AP enrollments. Schools with a large upper-middle class presence maintained their positional advantage. EMI theory infers these persistent gaps occurred because upper-middle class families exert pressures on their schools to make available educational opportunities for their children. While I did not directly ask my respondents if college admissions criteria influenced their curriculum, of the five upper-middle class districts, respondents from three volunteered that this was a factor in response to questions about the future of the AP program in their district or student/parent demand for AP courses.

> **Superintendent, La Mar Azul district:** There's a thread among our teaching staff at the high school that believes that all of our students are high-performing and so we should not be separating them . . . where some students take AP classes. But I think a reality has set in that, yes it's true to treat every student equally and not separate them, but our parents demand it, and so we do cater to parent wishes and we recognize that it's almost a factor in helping students get into the UCs [Universities of California].
> **Superintendent, Bailey district:** The main driver or variable on that [the growth of the AP curriculum in his district] is what's happening in the college admissions process. Particularly what's

> happening in the admissions process of top universities. Because even though, you know, [a] relatively small percentage of students go to top universities, what they're doing kind of drives sort of the whole perception of what you need to do. . . . I don't like it, and hopefully it's not going to last forever, but we're very much in a period in which the number of college-level classes that high schools students take, whether it's through the AP program or whether they're actually going to community colleges to take classes—is a really significant factor for a lot of students in terms of whether they get into top universities or not. And parents know that. Parents in this community are extremely sophisticated about that. Kids know this stuff. So as long as that's there there's going to continue to be pressure on the schools to increase the opportunities for kids to take college-level classes.
> **Superintendent, Sterling district:** We believe that we need to provide our students with every advantage because they're all going to competitive colleges and that's the expectation that we prepare them for that.

These respondents' answers are in accordance with a survey of AP teachers conducted in 2008 (Farkas & Duffett, 2009). Teachers were asked how convincing they found various explanations for the growth in the AP Program. Of those surveyed, 90% indicated they were convinced by the explanation that "there are more students who want their college applications to look better" and 76% were convinced that "high schools are expanding their AP Program to improve their school's ranking and reputation in the community." Only 32% agreed that "there are more students who want to be challenged at a higher academic level," an explanation never mentioned by my respondents.

It is clear that many district officials, particularly those serving affluent communities, perceive that they have to offer opportunities for marks of distinction for the college application process (even if they personally object to the program), which is consistent with EMI theory. Two other reasons were offered as well. The superintendent of the affluent Sterling district was the only person who referred to APs as facilitating occupational success, but only in the context of explaining why his district was shifting away from advanced courses in European languages and towards those covering Asian languages. In his view, "if you're going to be in business you need an Asian language." However, this perspective does not explain why *advanced, college-level* courses in Asian languages are needed.

A school board member at the large, central city district of Musuraca offered another explanation. In addition to the benefits of "pumping up

your resume and your transcript," he also referred to students enrolling in AP courses to obtain college credit to avoid scheduling problems endemic in the Universities of California. Earning college credits was in fact the original rationale for the AP program (Schneider, 2009), and this remains a substantial motivation for AP students (Farkas & Duffett, 2009). It is nonetheless striking that the main reason for broad AP curricula volunteered by the respondents is the college admissions process, not the needs of employers, nor the requirements of citizenship.

Understanding how schools initiate new AP subjects can shed light on the class and racial differences in AP subject growth documented in the statistical analysis. If EMI theory is correct, school officials in districts serving affluent communities should especially perceive parental demands for AP courses, while officials in districts serving less advantaged communities should be less likely to report such perceptions. I asked my respondents for their perceptions of student and parental demand for AP courses and if it influences the breadth of their AP curriculum. Respondents from all of the five upper-middle class districts indicated that their schools were responsive to student and parental demands for AP courses. A typical response comes from the superintendent of the Sterling district:

> **Author:** Is the major source of pressure to expand, to add an AP course, does that come from the district, principals and teachers, or parents? Which do you think would be the major push?
> **Superintendent, Sterling district**: Parents and students. . . . We have three or four new ones [AP courses] coming in this year. The teachers have created human geography. . . . I think teachers know that is what parents and students are looking for. So if they're sitting down to write a course, that, I think influences them. So it's a mixture of it.

The superintendent from La Mar Azul reported that a similar dynamic compelled his district's high school to offer AP Art History.

> **Author:** I don't remember what the last AP course that was added to the district . . .
> **Superintendent, La Mar Azul district:** Art History
> **Author:** Was that pushed by parents?
> **SLMAD:** Yeah. And by our principal too. I think the reason it was added is because there was a growing desire for additional new elective courses. That was one course that we could offer.

Other respondents had similar stories of specific courses added due to

parent and student interest, or teachers' anticipation of it. The superintendent of Tourneur district mentioned that the conjunction of parental demand, as well as the interest of a Mandarin speaker on his teaching staff, led one of his high schools to offer AP Chinese. The superintendent of Bailey district emphasized his staff's proactiveness in offering unique subject material, such as Japanese ("just because they wanted to offer something other than French and Spanish") and robotics.

Comparing the accounts of AP pressures and initiations in upper-middle class schools to working-class, racially diverse schools can shed some light on the puzzling finding that racial inequalities in AP offerings actually grew during the intervention period. Respondents from both of the two working-class districts told me that parental demand for AP courses was virtually non-existent. Consider the response of the superintendent of the Greer district, which serves a mostly working-class community, and at the time of the interview was dealing with a severe budget crunch, when I asked him if parents complained about the lack of resources:

> **Author:** Have you heard from parents who raise concerns or issues with school resources at all? Like do they complain about buildings or do they say, you know, like 'my kid needs better instructional materials' or things like that?
> **Superintendent, Greer district:** A lot of apathy [is] in the community. Their engagement is not where . . . you would want it. Small urban district, basically. And the level of parent engagement . . . is low.
> [Later in the interview I ask him specifically about AP courses]
> **Author:** Have parents, I know you said before there was this apathy, but have parents come to you asking for more AP courses or anything like that?
> **SGD**: No.

The lack of demand for AP courses, as well as dealing with the problems of a school population composed disproportionately of poor students, gives little incentive for schoolteachers or administrators to initiate new AP subjects. This is also evident in the accounts of two board members (interviewed separately) from the large urban Musuraca district. Musuraca is diverse racially and economically; some schools are dominated by children from upper-middle class families, and others draw disproportionately from poor neighborhoods. State- and federal-level accountability measures compelled schools serving impoverished students to focus on remedial education, at the cost of high-level curricula such as AP, until the district mandated that all high schools offer AP sub-

jects. One of them described a situation where a combination of a lack of demand and a focus on dealing with the problems of an at-risk student population force schools to put as minimal an effort into AP as possible.[11]

> **Board member, Musuraca district:** The push for school improvement is always from the parents. It's never from the teachers and principals.
> **Author:** Even for courses like Advanced Placement?
> **BMMD**: It's never from the teachers and principals.
> **Author:** So parents have come to the school board: 'I want,' uh . . .
> **BMMD:** More AP. Yes.
> **Author:** Really?
> **BMMD:** Yeah. Or they go to their PTA and they go to their principal and the principal can do it. They don't have to talk to us. He just has to say 'I want to put it in' and the [district] administration will OK it. The administration will say, 'Why don't you have a gifted and talented program?' So we have pushed principals to improve, the community has pushed principals to improve. It's a rare principal that jumps forward and says: 'this is what we're going to do.' There's some. I don't mean to tar them with a black brush. But . . . the push for school improvement doesn't come from school faculty. They're too busy working trying to keep things together, dealing with today's crisis, tomorrow's crisis, planning to do long-range academic planning. It's difficult in that level unless it's supported and encouraged.

The situation in Musuraca provides an explanation for increasing racial inequality in AP subjects and enrollments. While the Musuraca district ordered its high schools to offer more AP subjects, schools in other districts serving disproportionately Black and Hispanic students may not have had this kind of district oversight. Instead, like the Musuraca schools the board member describes, they are weighed down by a combination of factors—lack of student and parent demand, accountability measures, and administrative inertia—that precluded them from exploiting California's intervention to the same extent as other schools serving White and Asian students.

DISCUSSION AND CONCLUSION

This paper examines changes in socioeconomic and racial inequalities in high schools' Advanced Placement offerings and enrollments in

California. It did so during a period when California attempted—and retrenched—a number of interventions to expand access to Advanced Placement courses. It adjudicates between two perspectives for understanding inequalities in educational opportunities. On the one hand, there is the resource deprivation framework, which focuses on "opportunities to learn" and concludes that California's interventions would help schools serving disadvantaged students to increase their AP offerings and enrollments, and thus reduce inequalities. On the other hand, there is Effectively Maintained Inequality theory, which views AP courses as not just opportunities to learn but as opportunities to earn marks of distinction. Making it easier for schools to offer AP courses may alleviate *deprivation*, but any attempted reductions in *inequalities* are offset by the actions of advantaged families and schools, who are motivated to accumulate more opportunities for distinction, given intensified competition over admission to selective colleges (as reported by my respondents from affluent districts).

In sum, California's intervention succeeded in raising AP subject offerings and enrollments in schools serving disadvantaged populations, but as EMI theory predicts, it did very little to decrease inequalities on these outcomes. The resource deprivation framework is supported, in that California's support for expanding the AP curriculum increased subject offerings and enrollments in schools serving disadvantaged populations (namely, schools with a small upper-middle class presence or a large Hispanic or Black population). But EMI theory correctly points out that advantaged schools will increase their subject offerings and enrollments, resulting in stable—or sometimes growing—inequalities in AP subject offerings and enrollments. These inequalities are growing particularly fast for offerings of and enrollments in the newer AP subjects, reflecting advantaged families' (and their schools) quickly taking advantage of newer marks of distinction.

Interviews with school district officials help us understand these results. Officials in affluent districts candidly volunteered—without me raising the issue beforehand—that they expanded the breadth of their AP curricula to help their students be competitive in admissions at selective colleges, in line with the expectations of EMI theory. The interview data also hint at an explanation for the surprising creation of racial disparities in AP subject offerings that occurred once California started its intervention. School officials and teachers in schools serving Black and Latino students were unable to take advantage of California's policies possibly because of lack of student demand and constraints on school staffers' own time, since they have to deal with problems that occur in schools serving disadvantaged students.

This study has broader implications than just the success (or lack thereof) of California's interventions. First, studies using school poverty to gauge inequalities in advanced curriculum (Corcoran et al., 2004; Darity et al., 2001; Iatarola et al., 2011; Klopfenstein, 2004; Roscigno et al., 2006; Zarate & Pachon, 2006) may underestimate the extent to which socioeconomic status structures opportunities to obtain educational distinctions. Instead, this study shows that the presence of low-income students has at best modest associations with AP subject offerings and enrollments; the presence of advantaged families is a much better predictor. Unfortunately, such measures are not commonly available at the school level. In fact, this study had to use a measure of upper-middle class presence at the district level, and consequently probably also is underestimating school-level socioeconomic inequalities in AP subjects and enrollments.

The second implication is that the robust disparities in AP offerings and enrollments indicate that inequalities of educational opportunity are symptoms of deeper structural inequalities between families. My results indicate that it is difficult (if not impossible) to directly attack these inequalities using educational interventions. Admittedly, California's intervention did not strongly target disadvantaged communities; a more prolonged and aggressive intervention may have effectively reduced inequalities. However, analyses of AP inequalities in other states, such as Texas and Florida, have also found the effective maintenance of inequalities (Conger et al., 2009; Klopfenstein, 2004). It is worth pondering if EMI not only explains the lack of consequences of these interventions, but their design as well: it is not in the interest of political actors to legislate that disadvantaged communities have the same broad array of opportunities for educational distinctions that affluent communities have (Mintrom, 1993).

The third implication is that researchers could apply the tension between attempts to alleviate resource deprivation in schools and EMI processes to other educational resources. It is possible that the more removed the resource is from facilitating marks of distinction, the less relevant EMI theory is for that resource, which would explain the success of state interventions in reducing school finance inequalities (Evans, Murray, & Schwab, 1997; Murray, Evans, & Schwab, 1998). Recently, researchers have been paying more attention to inequalities in observed measures of teacher quality (e.g., Clotfelter, Ladd, & Vigdor, 2011; Lankford, Loeb, & Wyckoff, 2002) and EMI theory may be more applicable to teacher quality than to education spending. Affluent actors may work harder to procure high-quality teachers for their children than high-spending schools.

Finally, the durability of inequalities this study uncovered raises important issues about advanced curricula in general. As AP subjects and enrollments increase in schools serving upper-middle class students, it is very likely that at an individual level, inequalities in accumulating AP courses are growing as well. The rising ceiling on individuals' participation in AP courses might influence perceptions about what the standard AP course load is for students entitled to scholarships or admission to selective colleges, a dynamic that other studies have observed for other kinds of marks of distinction, such as grades and SAT scores (Alon, 2009; Bastedo & Jaquette, 2011). In other words, EMI processes influence notions of meritorious achievement (Alon, 2009).

Between-school inequalities in AP offerings may not be problematic in the college admissions process, given that college admissions officers reportedly evaluate applicants relative to other students from the same school (Attewell, 2001; Espenshade, Hale, & Chung, 2005; National Research Council, 2002). Still, attending a disadvantaged school with a low level of AP offerings may negatively affect students' own self-perceptions about their academic worthiness and exacerbate inequalities generated by self-selection behaviors.

There are also indications that "AP is no longer the zenith of academic challenge" (Schneider, 2009, p. 826), being surpassed by "homegrown" college-level courses taught in elite secondary schools. This is an outcome EMI predicts. It remains to be seen if this movement expands beyond the small fraction of high schools that "already have near perfect reputations with elite colleges," as one private school dean quoted by Schneider (2009, p. 827) put it. If it does, and Advanced Placement becomes the college-level curriculum of last resort in high schools, states will experience even more difficulty remedying the deprivations high schools experience, and inequalities in students' college destinations will probably increase even more than they have in the past. Less importantly, tracking inequalities in opportunities for educational distinctions will become even more of a challenge for researchers and educational advocates, since the standardization of the AP program makes it relatively easy to record in surveys and databases.

As noted in the introduction, some researchers argue that expanding AP access has little potential to increase educational opportunities for disadvantaged students simply because they lack the preparation to succeed in these classes (Dougherty & Mellor, 2010; Klopfenstein & Thomas, 2010). Instead, these authors propose increasing academic rigor at earlier stages in secondary and primary education. This study cannot speak to these claims, but the implication of this study's results is that whatever benefits there are for increasing rigor in schools, reducing inequalities in students' marks of distinction may not be one of them.

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Notes

1. Schools serving poor students are slightly overrepresented among grant recipients: among all California high schools, 22% are majority-poor; among the AP Challenge Grant high schools, a third were majority-poor (California Department of Education 2002).

2. According to data provided by the UCCP, about 20% of California high schools used at least one UCCP online AP course for at least one year during the period being examined here (the average number of years for those schools using UCCP was 2.2).

3. Because this study is about the AP program, I focus on academic marks of distinction. Others (Espenshade, Chung, and Walling, 2004; Golden, 2006; L. Kilgore, 2009; Stevens, 2007) have studied the considerable role of non-academic marks of distinction in the college admissions process.

4. Iatarola et al. (2011) also examined inequalities in AP subjects in Florida high schools from 2001 to 2005, but they only presented the changing effects of students' aggregated test scores on their high schools' AP offerings.

5. "Enrollments" refers to the number of enrolled seats in AP courses; a student who enrolled in two separate AP courses in a single year would contribute two enrollments to the school's total for that year.

6. Unfortunately, the UCCP did not make available enrollments in their courses. Enrollment in UCCP courses was imputed by using the median level of enrollment in those UCCP courses that were recorded by CBEDS. For example, the median enrollment in AP biology courses offered through UCCP and recorded by CBEDS was .9% of a school's student body. This percentage was used to impute enrollments in UCCP AP Biology courses not recorded in CBEDS. These imputations were done for only 1,414 AP courses, out of 64,362 AP courses.

7. The year in which the fall semester occurred represents an entire school year, e.g., 1997 refers to the 1997-1998 school year.

8. To illustrate this, say in one year an impoverished school offers two AP subjects and a rich school offers four AP subjects, there is an absolute difference of two AP subjects, the rich school offers 100% more AP subjects than the impoverished school. In the next year, the impoverished school offers four AP subjects and the rich school offers seven AP subjects, the absolute difference grew to three AP subjects but the relative difference shrank;

the rich schools offers only 75% more AP subjects than the impoverished school.

9. The relatively large effects of upper-middle class presence and the relatively low effects of school poverty are not artifacts of multicollinearity; Appendix A shows similar findings when these variables are entered in separate models.

10. As was the case with AP subject offerings, the importance of upper-middle class presence is robust even when this variable is entered in models without controlling for school poverty or racial composition, indicating it is not an artifact of multicollinearity.

11. The other board member of Musuraca, when I asked him to locate the key actor behind the push for AP courses (parents, the district, or schools), gave a very similar account, emphasizing the role of the district in pushing schools serving impoverished students to broaden their AP offerings.

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APPENDIX A

Effects of Upper-Middle-Class Presence, Student Poverty Presence, and Racial Composition Modeled Separately

	Old AP Subjects	New AP Subjects	Old AP Enrollments	New AP Enrollments
Proportion Upper-Middle-Class				
1997-1998	1.489 ***	2.495 ***	2.073 ***	3.590 ***
	(0.172)	(0.528)	(0.223)	(0.596)
1999	1.528 ***	2.149 ***	2.186 ***	3.791 ***
	(0.166)	(0.430)	(0.187)	(0.470)
2000-2002	1.180 ***[a]	1.304 ***[a]	2.190 ***	2.696 ***[a]
	(0.142)	(0.273)	(0.156)	(0.303)
2003-2005	1.131 ***	1.385 ***	2.225 ***	2.446 ***
	(0.146)	(0.237)	(0.161)	(0.255)
2006	1.199 ***	2.029 ***[ac]	2.487 ***[a]	2.933 ***[a]
	(0.164)	(0.225)	(0.213)	(0.299)
Proportion Impoverished Students				
1997-1998	-0.165	-1.452 ***	-0.586 ***	-2.682 ***
	(0.103)	(0.459)	(0.143)	(0.534)
1999	-0.144	-1.242 ***	-0.510 ***	-2.528 ***
	(0.090)	(0.380)	(0.136)	(0.394)
2000-2002	-0.031	-0.189 [a]	-0.362 ***[a]	-0.999 ***[a]
	(0.062)	(0.142)	(0.103)	(0.195)
2003-2005	-0.075	-0.277 **	-0.403 ***	-0.747 ***
	(0.070)	(0.119)	(0.085)	(0.178)
2006	-0.084	-0.287 **	-0.505 ***	-0.776 ***
	(0.110)	(0.134)	(0.115)	(0.195)
Proportion Black Students				
1997-1998	-0.300	-2.721 **	-0.555	-1.112
	(0.260)	(1.064)	(0.510)	(1.554)
1999	-0.272	-2.041 **	-0.611	-1.710
	(0.353)	(0.819)	(0.456)	(1.221)
2000-2002	-0.539 [a]	-0.462 [b]	-0.837 *	-0.778 *
	(0.333)	(0.395)	(0.484)	(0.462)
2003-2005	-0.613 **	-0.275	-0.896 *	-0.806 *
	(0.301)	(0.367)	(0.534)	(0.466)
2006	-0.550 *	-0.362	-1.041 *	-1.172 **
	(0.309)	(0.368)	(0.560)	(0.547)

APPENDIX A

Effects of Upper-Middle-Class Presence, Student Poverty Presence, and Racial Composition Modeled Separately *(continued)*

	Old AP Subjects	New AP Subjects	Old AP Enrollments	New AP Enrollments
Proportion Hispanic Students				
1997-1998	-0.356 ***	-1.646 ***	-1.107 ***	-3.122 ***
	(0.112)	(0.442)	(0.167)	(0.594)
1999	-0.350 ***	-1.593 ***	-1.023 ***	-3.234 ***
	(0.106)	(0.395)	(0.149)	(0.493)
2000-2002	-0.326 ***	-0.835 ***[a]	-0.881 ***[a]	-1.631 ***[a]
	(0.086)	(0.165)	(0.123)	(0.231)
2003-2005	-0.326 ***	-0.873 ***	-0.896 ***	-1.412 ***
	(0.090)	(0.172)	(0.125)	(0.247)
2006	-0.341 ***	-0.827 ***	-0.969 ***	-1.226 ***
	(0.104)	(0.157)	(0.142)	(0.269)

NOTE: Standard errors are presented in parentheses. Proportion upper-middle-class, proportion impoverished students, and racial composition (proportion black and proportion Hispanic) are entered in separate models. Proportion impoverished students and racial composition variables are lagged by one year for subjects; for enrollments these measures are contemporaneous. All models control for city / suburb / rural location, log enrollment (in the case of enrollments), lagged log enrollment (in the case of subjects), charter school status, and year indicator variables.

* $p < .10$; ** $p < .05$; *** $p < .01$

a. Effect is significantly different from effect in prior time period, $p < .05$

b. Effect is significantly different from effect in prior time period, $p < .10$

c. 2006 Effect is significantly different from 2000-2002 effect, $p < .05$

d. 2006 Effect is significantly different from 2000-2002 effect, $p < .10$

JOSHUA KLUGMAN is an assistant professor in the Department of Sociology and Department of Psychology at Temple University. His research interests include the college choice/admissions process, the role of selective colleges in status attainment, and the reception immigrant children receive in U.S. elementary schools. His recent work includes “The Politics of Equality: American Support for Redistribution in Education” in *Social Science Journal.*