Bilingual Education in California: Is It Working?

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INTRODUCTION

The topic of bilingual education has received heightened attention over the past few decades. How to educate children with limited English skills, or English learners (EL), is a highly controversial and debatable issue that deserves attention because of the vast numbers of English learners in the United States today. ELs are students for whom English is a second language and who come from homes in which a language other than English is spoken. Currently, there are about 5.5 million ELs in U.S. public schools (U.S. Department of Education, 2004). Their numbers have been growing dramatically over the past few decades, making them one of the fastest-growing student populations in the United States (Slavin & Cheung, 2004, p. 52). For example, from 1980 to 2000 the EL population doubled from 6 percent to 12 percent in the United States (Morse, 2002). Of this population, the majority of students are Spanish speakers (79%). This makes bilingual education largely a Latino issue.

California is the state with the largest number of EL students, containing over 25 percent of the nation's public school EL population. According to the California Department of Education (2005b), "In the 2003-04 school year there were nearly 1.6 million ELs in California public schools." ELs make up more than 25 percent of the total enrollment in California public schools; about 74 percent of these ELs are enrolled in elementary grades (kindergarten through 6th grade), and 85.1 percent are Spanish speakers (California Department of Education, 2005b). Without a doubt, California's large immigrant population plays a considerable role in the number of EL students in the state. This has a significant impact on the success of students and on the educational outcomes of schools in California.

After a review of the literature, I will assess the impact of ELs on California's public schools by measuring the effect of ELs on schools' academic performance.

What Is Bilingual Education?

When thinking about bilingual education we are inclined to think of a program designed to promote dual language proficiency in students. However, in the United States "most bilingual programs are designed to facilitate transition from a non-English language into English" (Sekhon, 1999, p. 1408).

The two most common language development models used to educate ELs are transitional bilingual education and structured English immersion. According to Mitchell et al. (1999), language development models arise out of a combination of three different elements: linguistic theory, political commitment, and educational focus. The two competing assumptions of linguistic theory posit that (1) first-language knowledge reinforces and enhances second-language learning, and (2) there is interference between languages learned simultaneously that must be overcome. The political element behind language development models reflects tensions between using the model to develop a monolingual, common national culture for all students, or a multilingual, cosmopolitan culture. Educational focus refers to the primary purpose of the language development model: academic content acquisition or language development.

Transitional bilingual education uses initial native language instruction for academic exposure and gradually transitions the student to academic instruction in English over a period of time. Once students develop English proficiency they are transitioned into the academic mainstream. This model emphasizes academic learning relying on linguistic reinforcement and aims to develop an English monolingual, common culture.

On the other hand, the second-language development employed most often in the United States is structured English immersion. According to Porter, “The goal is threefold: early literacy development in English, subject matter instruction in English with a special curriculum, and early inclusion of [English learner] students in mainstream classrooms for maximum exposure to native speakers of English and for greater integration of diverse student populations” (Porter, 2000, p. 54). This model assumes interference between languages and seeks to reduce that interference by offering minimal native-language instruction for English language learners in order to facilitate English proficiency.

The Bilingual Education Debate

Proponents of structured English immersion—a sink or swim approach to English language acquisition—argue that “delaying reading instruction in English is counterproductive and that English-only instruction… is a more effective approach” (as cited in Slavin & Cheung, 2004, p. 53). On the other hand, proponents of bilingual education argue that proficiency in two languages enables students to benefit cognitively and academically from bilingualism (as cited in Padilla & Gonzalez, 2001, p. 734). Supporters of bilingual instruction believe that this approach to learning English is the most beneficial for ELs. They believe schools should teach reading in the students’ native language and transition them into English-only reading instruction after they have developed substantial proficiency in spoken English. These individuals hold that “students with greater Spanish proficiency who are receiving content instruction in English should profit from their bilingualism because the content of instruction is not language specific and their bilingualism can transfer knowledge across languages thereby enabling content acquisition" (Padilla & Gonzalez, 2001, p. 734).

For others, bilingual education is not a matter of content acquisition or reading enhancement; rather, it is a matter of national identity. From this perspective, opponents of bilingual education maintain that "greater proficiency in Spanish is an impediment to high academic achievement because it signals that the student is less acculturated and/or committed to the culture of the school" (as cited in Padilla & Gonzalez, 2001, p. 734). The argument against bilingual education is constructed in terms of American nationalism.

According to Nunez-James, "This dual allegiance confuses their status in the eyes of the dominant majority and places them as second-class citizens in a hierarchy in which assimilation into the melting pot through the rejection of ethnicity is assumed to guarantee positions of sociocultural dominance and control" (Nunez-Janes, 2002, p. 66). They view offering instruction in a language other than English as threatening the country's sense of national unity by dividing the population along ethnic lines. They perceive English-only instruction for ELs as a strategy for survival and a means to achieve the American dream in an English-dominated market. Bilingual education in which instruction other than English is used is seen as a program that emphasizes differences rather than similarities within American society.

This view is sharply criticized by proponents of native-language instruction for ELs, who are suspicious of the assertion that language minorities can magically change their status and blend into American society by simply mastering the English language (Nunez-Janes, 2002, p. 66). Supporters of native instruction for ELs hold a more inclusive view of American national ideology, a perspective "based on an additive version of Americanism that sees the manifestation of a variety of ethnic identities and cultures as an integral part of U.S. national identity" (Nunez-Janes, 2002, p. 67). They believe that bilingualism and exposure to different cultures and languages is an asset rather than a hindrance, especially in our modern-day transnational environment (Nunez-Janes, 2002, p. 67).

What Does the Law Say?

The development of bilingual education in the United States has been characterized primarily by a few pieces of legislation and court cases. Prior to 1968 there was no national policy on bilingual education. From the 1880s through the 1960s language minority children were left to "sink or swim, to make progress, unassisted, in learning the common language of the school and community" (Porter, 2000, p. 52) or to fall behind. It was not until 1968 that President Lyndon Johnson signed the Bilingual Education Act (BEA), Title VII of the Elementary and Secondary Education Act, which was intended to help students with limited English skills (Leal & Hess, 2000, p. 1065; Porter, 2000, p. 52). Nevertheless, the Act was thought to be largely symbolic because of its low level of funding and its vague description of how best to implement bilingual education. Title VII did, however, help define students' educational civil rights as the right to learn content matter as well as the right to learn English (Baker & Hakuta, 1997, p. 2).

Specific instruction to teach ELs was given later under the Equal Educational Opportunities Act (EEOA) passed by Congress in 1974. Congress mandated that school systems receiving funding under the BEA had to use transitional bilingual education as the basic teaching methodology to teach English language learners (Felton, 1999, pp. 858-859).

More recently, the No Child Left Behind Act (NCLBA) of 2001 eliminated the BEA and replaced it with the English Language Acquisition, Language Enhancement, and Academic Achievement Act (Title III of NCLBA) (Varghese & Stritikus, 2005, p. 73). Title III provides funds for helping English language learners attain English proficiency while simultaneously meeting the same academic standards expected of all children (National Catholic Educational Association, 2002).

California: Leading by Example

Because California has the largest EL population, it has often served as the leading model for other states in legislating bilingual education. In 1976, California passed the Chacon-Moscone Bilingual-Bicultural Education Act (BBEA), a combination of the goals of the EEOA and the federal BEA, which required schools to offer bilingual education when ten or more limited English proficient children of the same language background were enrolled in the same grade (Baker & Hakuta, 1997, p. 3). The Act mandated a transitional approach to bilingual education. It was designed to enhance the students' native-language skills until they learned enough English to transfer into English-medium classrooms (Sekhon, 1999, p. 1437). The BBEA expired on June 30, 1987, but it remained at the center of the state's policy until 1998.

On June 2, 1998, California passed its most recent legislation, Proposition 227 — an initiative called English Language in Public Schools. The proposition requires that all English language learners be taught in structured English immersion programs rather than transitional bilingual education (Felton, 1999, p. 847). This measure mandates that ELs be placed in an English-immersion program for no more than one year under normal circumstances (Felton, 1999, p. 867). The goal is to place ELs in mainstream courses after one year. The proposition is grounded in the belief that students should learn enough English in one year so that they then can be transferred into English-only classrooms and be able to learn academic content in English. This measure severely limits the amount of native language instruction that ELs can receive.

The Effectiveness of Bilingual Education: What Really Works?

Even though national and California politicians have taken a stand on what they believe is the best way to educate language minority students, researchers have not yet reached an agreement on this issue. Research findings on the effectiveness of the different kinds of bilingual education models are conflicting. A review of the research on bilingual education reveals that there is support for and opposition to non-English-language instruction. Although many studies have been conducted to evaluate the effectiveness of bilingual education, they have not been able to build a consensus.

Criticism for bilingual education studies most often arises out of methodological issues (Gersten, 1999), conflicting linguistic theories, and/or disputes regarding educational focus. In assessing the effectiveness of bilingual education programs it is difficult to employ rigorous methodological standards. Specifically, problems with randomization and the length of program evaluations have been routinely cited in studies on bilingual education. Also, linguists have not reached a consensus on "whether knowledge of one language interferes [with] or reinforces the acquisition of a second language" (Mitchell et al., 1999, p. 89). With regards to educational focus, researchers remain divided on which program outcome should take precedence for ELs: academic acquisition or English-language acquisition.

Several studies have found support for bilingual education (see Table A1 in Appendix A). For example, when evaluating previous results of bilingual education and its effectiveness in teaching students how to read in English, Slavin and Cheung (2004) found considerable support for bilingual programs, and in no case did English-only programs outperform bilingual programs (p. 54). They found that students taught to read in both their native language and in English “performed much better on English reading tests than did the students taught only in English” (p. 54).

In addition, other researchers have conducted a review of existing studies in the form of a meta-analysis (Greene, 1997; Willig, 1985). Both of these studies found significant positive effects in favor of bilingual instruction over English immersion. However, these studies have been criticized by other researchers and their results questioned. For example, Gersten (1999) and Baker (1999) evaluated Greene’s study and found no benefits of native-language instruction. Gersten also notes numerous methodological problems in the data (p. 45). Also, Baker (1999) criticizes Willig’s analysis because, he states, although “Willig found bilingual instruction in English and Spanish superior to all-English instruction in terms of students’ academic performance in Spanish… the effect of bilingual education on *English alone* was negative” (p. 707, emphasis in original). He asserts that “Too much classroom use of Spanish harms learning English” (p. 707). Similarly, Porter (2000) claims that “there is no evidence for the superiority of native-language teaching programs for students’ better or more rapid learning either of English or of subject matter” (p. 52).

In a study indirectly measuring the effectiveness of bilingual education, Padilla and Gonzalez (2001) examined the relationship between ESL/bilingual instruction and school performance of U.S.-born and Mexican-born high school students. The researchers performed a secondary analysis of an existing data set in which students were asked to self-report whether or not they had ever received bilingual/ESL instruction, their nationality, immigrant status, and GPA, among other things. The researchers found that “general-track students who receive some schooling in Mexico and college-track students that receive ESL/bilingual education had higher GPAs compared to students without such instruction” (p. 738).

Even among the studies that support bilingual education there is little consensus on how long it takes to acquire second-language proficiency. Some studies concluded that students need four to seven years to achieve grade-level academic performance in English (as cited in Crawford, 2004). Another study claims that students in Arizona need on average 3.3 years to acquire proficiency in English, with the rate of acquisition varying from 1 to 6.5 years (as cited in Crawford, 2004). In regards to Proposition 227, some believe that "the one-year sheltered immersion, which is to precede students' transfer into English-only classrooms, will not equip children with sufficient English fluency to succeed in English-medium classrooms" (Sekhon, 1999, p. 1424). Perhaps the one thing that is certain is that there is no standard learning curve for acquiring a second language that is sure to match the needs of all children.

What Now?

Given the controversy and lack of consensus regarding bilingual education, my aim in this study is to determine the state of ELs in California, thereby indirectly evaluating bilingual education in that state. The study analyzes whether ELs significantly affect schools' academic performance. The main goal of this study is to measure the impact of ELs on schools' academic performance after controlling for several school characteristics. Because schools' academic performance is contingent on student test scores, the impact of ELs on schools' academic performance reveals the overall state of ELs in California public schools.

METHODS

Data are taken from California's Department of Education 2004 Academic Performance Index Base Data File. The data file contains a measure of school academic performance for public elementary, middle, and high schools in California as well as other school attributes, such as percent of ELs, racial composition, parental education, poverty, etc. School academic performance is given in terms of the Academic Performance Index (API).

The API is used to measure school and district performance based on student test scores. Scores range from 200 to 1,000 (with 800 as the minimum goal) and indicate how well a school or district performed, based on spring testing. Two out of three types of tests given as part of the STAR (Standardized Testing and Reporting) program are used to calculate the API; they are: (1) California Standards Tests (CSTs) comprising tests in English/language arts and mathematics given in all grades, science in grades 5 and 9-11, and history/social science in grades 8, 10, and 11 based on California's academic content standards, and (2) California Achievement Test, Sixth Edition (CAT/6), a standardized national test given to students in grades 2-11. The third STAR test, Spanish Assessment of Basic Education, Second Edition (SABE/2), a test for Spanish-speaking students who have been in a California school for a year or less, is not part of the API calculation. To calculate the API, individual student test scores are weighted and summed.[1]

The variables used in the analyses are summarized in Table 1. The primary independent variable of interest to this study is the percent of ELs. Nevertheless, controlling for variables such as the percent of students in the free or reduced lunch program (a measure of poverty), parental education level, schools' racial/ethnic composition, etc., will allow a more accurate understanding of the effect of ELs on the API.

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[1] In order to protect the integrity of this school measure, certain students are excluded from the calculations used to determine the API. While the API includes scores for students who are ELs and in Special Education, it excludes scores for students who were not continuously enrolled in a school since October of the school year, Special Education students who choose to be exempted, and students whose parents requested they not be tested. In addition, although small schools with 11 to 99 students are given an API, this value is less reliable because of the low number of students. For this reason, schools with less than 100 students are excluded from the analyses. Also, smaller schools with fewer than 11 valid test scores and those that serve mostly high-risk students, such as continuation schools, are given an alternate performance measure, the Alternative Schools Accountability Model (ASAM). ASAM schools receive an API but have no rankings, growth targets, or reported demographic characteristics. Therefore, these schools are excluded from the analyses.

The average percentage of ELs is highest at the elementary school level, about 28 percent, and decreases through the middle school level and high school level, where it is about 16 percent. Similarly, the average percentage of students in the free or reduced lunch

Table 1. Descriptive Statistics of Variables Used in Analyses by School Level.

	Elementary Schools		**Middle Schools**		**High Schools**	
Variables[2]	*MEAN*	*SD*	*MEAN*	*SD*	*MEAN*	*SD*
Academic Performance Index 2004	737.22	91.40	702.99	95.34	673.89	88.02
Percent English Learners	28.31	22.82	20.70	17.49	16.20	14.93
Socioeconomic Factors						
Percent of Students in Free/Reduced Lunch Program	54.18	31.18	48.02	28.49	35.52	24.81
Percent of Parents HS Graduates	25.78	12.98	23.98	10.47	23.12	10.15
Percent of Parents Some College Education	23.90	10.99	23.88	9.80	24.11	9.29
Percent of Parents College Graduates	18.41	12.91	19.98	11.98	22.34	10.70
Percent of Parents Graduate School Education	10.84	13.04	11.28	12.29	11.52	11.55
Race/Ethnicity						
Percent White Students	33.44	27.67	35.63	27.76	39.50	26.94
Percent African American Students	8.24	12.22	9.04	12.78	7.59	10.41
Percent Hispanic or Latino Students	44.84	29.52	42.59	28.40	38.32	26.30
Percent Asian Students	8.34	12.70	7.69	11.41	8.64	12.45
Percent Filipino Students	2.53	4.76	2.42	4.20	2.79	4.63
Percent Pacific Islander Students	0.63	1.22	0.67	1.23	0.61	1.02
Percent American Indian Students	0.97	2.93	0.92	1.90	1.17	3.13
Other School Characteristics						
Percent of Teachers with Emergency Credentials	3.21	5.42	6.21	7.84	6.44	8.85
Average Class Size (Grades K-3)	19.48	1.85	…		…	
Average Class Size (Grades 4-6)[3]	29.10	3.15	29.47	3.35	…	
Number of Core Academic Courses	…		28.73	3.09	27.57	3.62
N	4756		845		894	

program is highest at the elementary school level and lowest at the high school level. On the other hand, parental education level is lowest for students in elementary schools and highest for students in high schools. The racial and ethnic breakdown of students is similar across school levels. With respect to other school characteristics, the average percentage of teachers with

[2] For a definition of the variables used in the analyses see Appendix B.
[3] The average class size for grades 4 through 6 is included in the analyses of middle schools because middle schools in California typically include grades 6 through 8.

emergency credentials is lowest at the elementary school level and highest at the high school level, while the average class size and number of core academic courses remain similar across school levels.

Bivariate correlations between each independent variable and the API
Table 2. Bivariate Correlations by School Level.

	Elementary Schools	Middle Schools	High Schools
Variables	API	API	API
Percent English Learners	-0.69***	-0.74***	-0.62***
Socioeconomic Factors			
Percent of Students in Free/Reduced Lunch Program	-0.85***	-0.88***	-0.73***
Percent of Parents HS Graduates	-0.55***	-0.66***	-0.61***
Percent of Parents Some College Education	0.18***	0.17***	0.13***
Percent of Parents College Graduates	0.79***	0.78***	0.70***
Percent of Parents Graduate School Education	0.74***	0.81***	0.76***
Race/Ethnicity			
Percent White Students	0.68***	0.75***	0.60***
Percent African American Students	-0.22***	-0.36***	-0.32***
Percent Hispanic or Latino Students	-0.73***	-0.75***	-0.67***
Percent Asian Students	0.38***	0.37***	0.35***
Percent Filipino Students	0.13***	0.08**	0.07*
Percent Pacific Islander Students	-0.02	-0.05	-0.07*
Percent American Indian Students	-0.04**	0.07*	-0.02
Other School Characteristics			
Percent of Teachers with Emergency Credentials	-0.24***	-0.25***	-0.18***
Average Class Size (Grades K-3)	0.01	…	…
Average Class Size (Grades 4-6)	0.08***	-0.02	…
Number of Core Academic Courses	…	0.02	0.10**
N	4756	845	894

*$p < .05$; **$p < .01$; ***$p < .001$.

are presented in Table 2 by school level. Beginning with elementary schools, the majority of correlations (with the exception of the percentage of Pacific Islander students and the average class size for kindergarten through 3rd grade) are statistically significant at the 0.01 level or beyond. The percent of ELs is strongly correlated with API. This correlation is negative, as expected, meaning that as the percent of ELs increases, test scores decline. The strongest correlation is between API and the percent of students in the free or reduced lunch program (-

0.85). As the percent of students in the free or reduced lunch program increases, the API decreases. The parental education variables behave as expected: increasing parental education is associated with increasing API score. As for the race/ethnicity variables, the two strongest relationships with API are the percent of white students and the percent of Hispanic or Latino students. However, the correlation between API and whites and the correlation between API and Hispanic or Latino students are in the opposite direction: increasing the percentage of white students raises API, while an increase in the percentage of Hispanic or Latino students lowers API. The correlations for other school characteristics are all weak; only the correlation between API and the percent of teachers with emergency credentials and the correlation between API and average class size for grades 4 through 6 are statistically significant. As one might expect, a high rate of emergency credentialed teachers is detrimental to school outcomes.

For middle schools, the associations between the variables and API are very similar to the relationships observed at the elementary school level. Again, the majority of correlations (with the exception of the percent of Pacific Islander students, average class size for grades 4 through 6, and the number of core academic courses) are statistically significant at the 0.05 level or beyond. There is a strong, negative correlation between the percent of ELs enrolled in a school and API, and a similar association exists between API and the percent of students in the free or reduced lunch program. The parental education variables behave the same way as they do at the elementary school level. The race/ethnicity variables also behave similarly as at the elementary school level, with one exception. While at the elementary school level the percent of American Indian students was negatively associated with API, at the middle school level it is positively associated with API (however, at both levels the correlations are very weak).

At the high school level, the relationships between the variables and API are similar to the relationships observed at the elementary and middle school levels. Only the relationship between the percent of American Indian students and API is not significant. The relationship between ELs and API is once again negative, although it is not as strong as the correlations observed at the elementary and middle school levels. The remaining variables behave as expected and in the same manner as they do at the elementary and middle school levels.

Given these observations, we would expect that the variables which are most strongly associated with API will be significant predictors of API in the regression analyses. In other words, we should expect that the percent of ELs, percent of students in the free or reduced lunch program, parental education level (with the exception of percent of parents with some college education), percent of white students, and percent of Hispanic or Latino students will be significant predictors of API, net of other factors.

RESULTS

A series of multiple regressions were performed for each school level to examine the relative impact of each independent variable on the academic performance of schools in California. For each school level, a baseline regression was conducted using the 2004 API as the outcome variable and the percent of ELs as the predictor variable. This analysis was followed by four additional models in which different school characteristics (i.e., percent of students in the free or reduced meal program, parent's educational attainment, racial/ethnic composition, number of core academic courses, and percent of teachers with emergency credentials) were aed. In the last model, relevant interactions are considered to examine the extent to which these school factors and interactions could account for schools' academic performance.

Elementary Schools

The results of the models predicting elementary school API are presented in Table 3. In the first model, a regression analysis was performed using academic performance as the outcome variable and the percent of ELs as the predictor. This baseline model accounts for 48% of the variation in API. Every one percent increase in a school's EL population is associated with a 2.77 point decrease in the school's API score.

In the second model, a regression analysis was performed to analyze the effect of ELs on academic performance controlling for several socioeconomic factors, such as the percent of students receiving free or reduced meals and parental education level. Adding these variables resulted in a 31% increase in the r-squared. This model predicts 79% of the variability in the API. Controlling for these factors substantially diminishes the effect that the size of the English-learner population has on the API score. In fact, the percent of students in the free/reduced lunch program is a more powerful predictor ($\beta = -1.15$; $p < .001$) of a school's API score than is the percent of ELs ($\beta = -0.14$; $p < .01$).[5] Parental education level affects API in the same manner as was observed at the bivariate level.

The third and fourth columns in Table 3 present the results of regressions designed to determine the effect of ELs on API controlling for socioeconomic factors in addition to schools' racial composition, and other school characteristics, respectively. The addition of school racial/ethnic composition (Model III) increases the effect of the percent of ELs on API, and decreases the effects of socioeconomic factors. What is interesting to note is that the presence of

[5] The variable "% Students in the Free/Reduced Lunch Program" is highly related to income level and thus functions as a proxy for poverty.

all racial/ethnic groups has positive effects on API (except for the percentage of American Indian students, which is nonsignificant). This is the opposite of what was

Table 3. Regressions: Elementary Schools.

	Model I		*Model II*		*Model III*		*Model IV*		*Model V*	
Variables	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Constant	815.77***	1.52	706.52***	7.01	528.09***	26.63	540.27***	26.94	515.29***	28.85
Percent English Learners	-2.77***	0.04	-0.14**	0.05	-0.58***	0.06	-0.56***	0.06	-1.40***	0.13
Socioeconomic Factors										
Percent of Students in Free/Reduced Lunch Program	…		-1.15***	0.05	-0.68***	0.05	-0.68***	0.05	-0.24	0.24
Percent of Parents HS Graduates	…		0.86***	0.08	0.75***	0.08	0.73***	0.08	0.82***	0.08
Percent of Parents Some College	…		0.45***	0.08	0.45***	0.08	0.42***	0.08	0.51***	0.08
Percent of Parents College Graduates	…		2.04***	0.09	1.73***	0.09	1.70***	0.09	1.66***	0.09
Percent of Parents Graduate School	…		2.44***	0.10	2.16***	0.09	2.18***	0.09	2.20***	0.09
Race/Ethnicity										
Percent White Students	…		…		1.97***	0.26	1.79***	0.26	1.71***	0.26
Percent African American Students	…		…		0.87**	0.27	0.73**	0.27	0.76**	0.27
Percent Hispanic or Latino Students	…		…		1.67***	0.26	1.48***	0.26	1.64***	0.26
Percent Asian Students	…		…		2.76***	0.26	2.54***	0.27	2.24***	0.27
Percent Filipino Students	…		…		2.42***	0.29	2.21***	0.30	2.28***	0.30
Percent Pacific Islander Students	…		…		0.52	0.56	0.40	0.55	0.64	0.55
Percent American Indian Students	…		…		-0.13	0.34	-0.15	0.34	0.04	0.34
Other School Characteristics										
Percent of Teachers with Emergency Credentials	…		…		…		-0.25*	0.11	-2.26*	1.11
Average Class Size (Grades K-3)	…		…		…		-1.43***	0.33	0.27	0.71
Average Class Size (Grades 4-6)	…		…		…		1.23***	0.20	1.43***	0.39
Interactions										
% EL x % Hispanic/Latino	…		…		…		…		0.00	0.00
% EL x % on Free/Reduced Lunch	…		…		…		…		0.01***	0.00
% EL x % Asian	…		…		…		…		0.01***	0.00
Class Size (K-3) x % Teachers w/ Emer. Credentials	…		…		…		…		-0.02	0.05
Class Size (K-3) x % on Free/Reduced Lunch	…		…		…		…		-0.02*	0.01
Class Size (4-6) x % Teachers w/ Emer. Credentials	…		…		…		…		0.08**	0.03
Class Size (4-6) x % on Free/Reduced Lunch	…		…		…		…		-0.01	0.01
Model Specifics										
N	4756		4756		4756		4756		4756	
Adjusted R Square	0.48***		0.78***		0.82***		0.82***		0.82***	
R Square Change	0.48***		0.31***		0.03***		0.00***		0.00***	

Note: The models represent separate regressions which included only those independent variables for which estimates are presented.
*p < .05; **p < .01; ***p < .001.

observed at the bivariate level. Controlling for school-level racial/ethnic composition increased the amount of variation of API scores explained to 82%. Even though the effect of ELs increased somewhat from the previous model ($\beta = -0.58$; $p < .001$), the relative importance of this school-level characteristic remains the second smallest of all significant predictors of API, after the percent of parents with some college education.

The fourth model adds the percent of teachers with emergency credentials and the school's average class size (kindergarten through 3rd grades and 4th through 6th grades). The addition of these school-level characteristics does not significantly increase the amount of explained variability in API scores, and only slightly decreases the strength of the effect for ELs. Nevertheless, these three variables are all statistically significant predictors of school API score. The percentage of teachers with emergency credentials in a school impacts the API score in the same manner detailed at the bivariate level: a one percentage point increase in teachers with emergency credentials slightly decreases API (0.25 points). What is interesting to note is that an increase in the average class size for kindergarten through 3rd grades causes a decrease in the API score, while the opposite is true for grades 4 through 6. Even though this seems contradictory at first glance, this finding reflects the literature on class size. Smaller classes appear to be important in the earlier grades, where children benefit more from having individual attention from the teacher, whereas in the later grades this is not as important because students learn substantially from their peers (Achilles, Finn, & Pate-Bain, 2002; Biddle & Berliner, 2002; Smith, Molnar, & Zahorik, 2003; Greene & Winters, 2005).

At the elementary school level, it is clear that ELs, poverty, parental education, students of various races and ethnicities (with the exception of Pacific Islander and American Indian students), and other school characteristics all have a significant effect on API. Most factors have a positive effect on school API, except for ELs, poverty, the percentage of emergency credentialed teachers, and large class size in the early years (K-3). While these factors definitely reveal a lot about what impacts the way public elementary schools succeed in California, a final regression with several interactions provides a more detailed description of the complex relationships that affect API (see Model V in Table 3).[3]

Significant interactions reveal that the main culprit for low-achieving schools, or schools with low API scores, is poverty.[6] For example, when schools have a large concentration of both ELs and poor students, the API score is decreased by 92 points. The significance of this effect is noted when we compare that impact to one in schools with a low number of both ELs and poor students—a decrease in API of only 13 points. Because ELs are most likely recent immigrants or children of immigrants, they probably reside in receiving communities with a high concentration of other immigrants like themselves. This will increase the chance that the schools they attend will have a large concentration of ELs. Also, since the largest proportion of ELs are Hispanic/Latino and the largest Hispanic/Latino group is Mexican, these students are most likely poor and reside in such communities. Mexican immigrants tend to be poorly educated and are members of a low socioeconomic group (Allensworth, 1997; Borjas, 1996; Grogger & Trejo, 2002; Padilla & Glick, 2000); therefore, ELs most likely reside in poor communities and attend schools with scarce resources.

A second interaction reveals the negative effect of ELs and the positive effect of Asian students on API. When an elementary school contains a large number of ELs and a small number of Asian students, the net effect is a decrease in API score of 71 points. Conversely, a small number of ELs and a large number of Asian students results in a 40 point increase in API. Asians have a positive effect on API, and having a critical mass of them will positively influence

[6] Effects for each significant interaction were calculated and can be found in Appendix A, Table A2.

API. Schools with a large concentration of poverty, however, are least likely to have a large concentration of Asians because of residential segregation. Because Asians tend to fare better economically they generally do not reside in poor neighborhoods and thus are not likely to be found in poor schools.

Two last interactions with class size support the conclusion that poverty is what impacts API most negatively. One interaction with class size in the lower grades (K-3) and students on free/reduced lunch revealed that the combination of having large classes and a large mass of poor students results in a 15 point decrease in API, while the combination of having small classes and a low concentration of poor students decreases API by only 1 point. The last interaction revealed that a large class size in the later grades (4-6) and a small number of emergency credentialed teachers actually increases API by 49 points; this is the largest positive effect on API. Schools that are most likely to have large classes in the early grades, a large concentration of poor students, and a large number of emergency credentialed teachers are those with minimal resources. Poor schools not only suffer from the main effects of ELs, students in the free/reduced lunch program, emergency credentialed teachers, and large classes in the early grades; they also suffer from additional effects of the interactions that arise between these and other factors.

Middle Schools

The results of the regression analyses for middle schools are presented in Table 5. The first model shows a regression analysis with academic performance as the outcome variable and the percent of ELs as the predictor. A one percent increase in the English

Table 4. Regressions: Middle Schools.

	Model I		*Model II*		*Model III*		*Model IV*		*Model V*	
Variables	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Constant	786.48***	3.42	749.73***	19.22	697.48***	43.48	688.74***	44.24	713.33***	47.60
Percent English Learners	-4.03***	0.13	-0.79***	0.17	-1.21***	0.15	-1.20***	0.15	-1.60***	0.31
Socioeconomic Factors										
Percent of Students in Free/Reduced Lunch Program	…		-1.46***	0.10	-0.65***	0.10	-0.64***	0.10	-1.37**	0.45
Percent of Parents HS Graduates	…		-0.18	0.25	0.29	0.21	0.29	0.21	0.40	0.22
Percent of Parents Some College	…		-0.01	0.23	0.28	0.19	0.25	0.19	0.36	0.20
Percent of Parents College Graduates	…		0.79***	0.22	1.39***	0.20	1.39***	0.20	1.42***	0.20
Percent of Parents Graduate School	…		2.52***	0.26	2.40***	0.22	2.42***	0.22	2.32***	0.23
Race/Ethnicity										
Percent White Students	…		…		0.20	0.41	0.07	0.42	0.14	0.42
Percent African American Students	…		…		-1.74***	0.43	-1.88***	0.43	-1.79***	0.43
Percent Hispanic or Latino Students	…		…		-0.10	0.41	-0.24	0.42	-0.09	0.43
Percent Asian Students	…		…		0.97*	0.42	0.83	0.42	1.12*	0.44
Percent Filipino Students	…		…		0.31	0.50	0.19	0.51	0.23	0.51
Percent Pacific Islander Students	…		…		-0.73	1.02	-0.54	1.02	-0.34	1.03
Percent American Indian Students	…		…		-1.65*	0.80	-1.66*	0.80	-1.46	0.83
Other School Characteristics										
Percent of Teachers with Emergency Credentials	…		…		…		-0.03	0.15	0.18	1.00
Average Class Size (Grades K-3)	…		…		…		…	…	…	
Average Class Size (Grades 4-6)	…		…		…		0.77*	0.38	-0.08	0.84
Number of Core Academic Courses	…		…		…		-0.04	0.41	-0.29	0.85
Interactions										
% EL x % Hispanic/Latino									0.00	0.00
% EL x % on Free/Reduced Lunch	…		…		…		…		0.01	0.00
% EL x % Asian									-0.01	0.01
Class Size (4-6) x % Teachers w/ Emer. Credentials									-0.04	0.05
Class Size (4-6) x % on Free/Reduced Lunch									0.02	0.01
# Core Courses x % Teachers w/ Emer. Credentials									0.03	0.05
# Core Courses x % on Free/Reduced Lunch	…		…		…		…		0.00	0.01
Model Specifics										
N	845		845		845		845		845	
Adjusted R Square	0.55***		0.84***		0.89***		0.89***		0.89***	
R Square Change	0.55***		0.30***		0.05***		0.00		0.00	

Note: The models represent separate regressions which included only those independent variables for which estimates are presented.
**p* < .05; ***p* < .01; ****p* < .001.

learner student body population is associated with a 4.03 point decrease in the API score; this baseline model accounts for 55% of the variation in API.

The second model introduces socioeconomic factors. Accounting for these factors substantially reduces the effect that a school's population of ELs has on API. As was true at the elementary school level, the percentage of students in the free/reduced lunch program is a stronger predictor of API score ($\beta = -1.46$; $p < .001$) than is the percentage of ELs ($\beta = -0.79$; $p < .01$). Of the parental education variables, only the percent of parents who are college graduates and the percent of parents with a graduate school education are significant predictors of API. As expected, an increase in these two variables is associated with an increase in API score. The addition of these variables significantly increases the explanatory power of the model, which now accounts for 84% of the total variation in API.

The third column introduces the race/ethnicity of the student body population. The addition of these factors increases the effect of the percentage of ELs and decreases the effect of students in the free or reduced meal program on API. At this school level, only the percent of African American students, the percent of Asian students, and the percent of American Indian students are significant predictors of API. The effects of both the percent of African American students and the percent of American Indian students are large and negative, while the effect of the percent of Asian students is positive. The addition of race/ethnicity significantly increases the amount of variability of API scores that can be explained to 89%.

The fourth model introduces additional school-level characteristics (i. e., the percent of teachers with emergency credentials, the average class size for grades 4 through 6, and the number of core academic courses). Of these variables, only the average class size significantly influences API: with each additional student, API increases by approximately three-quarters of a point. In spite of this, the addition of these variables did not significantly increase the amount of variation in API that can be explained.

Unlike at the elementary school level, at the middle school level there are only a limited number of factors that have a significant effect on API. Also, the majority of these factors (except for the two significant parental education variables and large classes in grades 4-6) have a negative impact on API. In order to understand whether there are further relationships between the variables that affect API, I have included an additional regression with interactions (see Model V in Table 4).[7]

At the middle school level, no significant interactions emerge. Nevertheless, the interaction between ELs and students on free/reduced lunch is barely nonsignificant (p=0.06) and will be used to highlight the devastating effects that poor schools produce.[6] This interaction reveals that when middle schools have a large concentration of ELs and poor students, API score decreases by 165 points. This extremely large effect can be contrasted with the minimal impact that schools suffer when they have a low percentage of ELs and a low number of students in the free/reduced lunch program; this results in only a 32 point decrease in API compared to a school with no ELs or students in the free/reduced lunch program. With an API score that ranges between 0 and 1000 and with schools striving to achieve a score of 800, a decrease of 165 points is devastating. This is exactly what results in schools with a large concentration of poverty.

High Schools

Table 5 displays the results of the regression analyses for high schools. Consistent with prior analyses, Model I presents a regression in which academic performance is the outcome variable and the percent of ELs is the sole predictor. As has been the case

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[7] Effects for each significant interaction were calculated and can be found in Appendix A, Table A3.

Table 5. Regressions: High Schools.

	Model I		*Model II*		*Model III*		*Model IV*		*Model V*	
Variables	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Constant	733.26***	3.41	617.42***	21.00	437.85***	57.85	434.49***	58.51	422.87***	58.32
Percent English Learners	-3.66***	0.15	-0.72***	0.20	-1.25***	0.18	-1.26***	0.18	-1.43***	0.38
Socioeconomic Factors										
Percent of Students in Free/Reduced Lunch Program	…		-0.58***	0.12	-0.11	0.12	-0.08	0.12	0.17	0.47
Percent of Parents HS Graduates	…		-0.24	0.28	0.21	0.26	0.11	0.26	0.25	0.26
Percent of Parents Some College	…		0.73**	0.27	1.13***	0.26	1.07***	0.26	1.15***	0.26
Percent of Parents College Graduates	…		1.58***	0.26	1.80***	0.25	1.66***	0.26	1.69***	0.25
Percent of Parents Graduate School	…		3.60***	0.29	3.20***	0.28	3.11***	0.28	3.01***	0.28
Race/Ethnicity										
Percent White Students	…		…		1.64**	0.57	1.48*	0.59	1.65**	0.59
Percent African American Students	…		…		-0.32	0.59	-0.60	0.61	-0.41	0.61
Percent Hispanic or Latino Students	…		…		1.52**	0.56	1.25*	0.59	0.93	0.59
Percent Asian Students	…		…		2.94***	0.57	2.73***	0.59	3.35***	0.60
Percent Filipino Students	…		…		1.91**	0.64	1.73**	0.66	1.77**	0.66
Percent Pacific Islander Students	…		…		-0.98	1.59	-0.80	1.60	-0.44	1.59
Percent American Indian Students	…		…		-0.16	0.74	-0.16	0.75	-0.44	0.77
Other School Characteristics										
Percent of Teachers with Emergency Credentials	…		…		…		0.37*	0.17	-0.19	0.72
Number of Core Academic Courses	…		…		…		1.07*	0.44	0.84	0.72
Interactions										
% EL x % Hispanic/Latino	…		…		…		…		0.02**	0.01
% EL x % on Free/Reduced Lunch	…		…		…		…		-0.01*	0.01
% EL x % Asian	…		…		…		…		-0.02*	0.01
# Core Courses x % Teachers w/ Emer. Credentials	…		…		…		…		0.02	0.03
# Core Courses x % on Free/Reduced Lunch	…		…		…		…		0.00	0.02
Model Specifics										
N	894		894		894		894		894	
Adjusted R Square	0.39***		0.71***		0.79***		0.79***		0.80***	
R Square Change	0.39***		0.33***		0.08***		0.00*		0.01***	

Note: The models represent separate regressions which included only those independent variables for which estimates are presented.
*$p < .05$; **$p < .01$; ***$p < .001$.

throughout, the two are inversely related: each one percent increase in the size of the EL population decreases API scores by 3.66 points. The baseline model explains 39% of the total variation in API scores.

Adding socioeconomic factors considerably decreases the effect of ELs on API scores. Of the socioeconomic variables, only the percent of parents who are high school graduates is not a significant predictor of API. As has been the case throughout, increasing the percent of students in the free or reduced lunch program significantly reduces API scores. On the other hand, the parental education variables that are significant all positively impact the API score. Accounting for socioeconomic factors increased the total variation explained by 33%.

Adding race and ethnicity to the model (Model III) renders the percent of students in the free or reduced lunch program nonsignificant. Of the race and ethnicity variables, only the percents of white students, Hispanic or Latino students, Asian students, and Filipino students are significant (and positive) predictors of API. The addition of race/ethnicity increases the amount of variability of API scores that can be explained to 79%.

Other school characteristics are added in the fourth model, such as the percent of teachers with emergency credentials and the number of core academic courses. Each of these variables is a significant predictor of API. What is interesting to note here is that a one percent increase in the percent of teachers with emergency credentials is associated with a 0.37 point increase in the API score; nonetheless, adding these variables did not significantly increase the total amount of variability explained.

At the high school level most variables have a significant effect on API, and all of these significant variables, with the exception of ELs, have a positive effect on API. Nevertheless, to better understand the impact of these factors on API a fifth regression was performed, which included several interactions (see Model V in Table 5).[7]

As with the elementary and middle school levels, the interactions that emerge underscore the harmful effects of poverty.[8] The first interaction between ELs and the percentage of Hispanic/Latino students reveals that having a large number of Hispanic/Latino students who are not ELs has a positive effect on API. When schools have a low number of ELs and a large number of Hispanic/Latino students, the API score increases by 58 points. On the other hand, having a large concentration of ELs and a low concentration of Hispanic/Latino students results in a 33 point decrease in the API. As mentioned before, ELs most likely reside in low-income communities and thus attend schools with scarce resources. This causes an additional decrease in the performance of poor schools as a result of the interactions that arise when a school has ELs.

The added losses that poor schools suffer are further emphasized by the two remaining interactions. When a school has a large number of ELs and a large number of students in the free/reduced lunch program, it suffers a loss of 35 points to its API score. Also, when a school has a large number of ELs and a small number of Asian students, the result is a decrease in API by 45 points. In contrast, a school with a small number of both ELs and poor students does not suffer any loss in API score, while a school with a small number of ELs and a large number of Asian students increases its API by 69 points. Poor schools suffer increased losses in API due to the complex interactions that emerge between the conditions that they are plagued with, such as having large numbers of ELs and poor students, and having small numbers of Asian students.

[8] Effects for each significant interaction were calculated and can be found in Appendix A, Table A4.

DISCUSSION

This study has evaluated the impact of ELs on the academic performance of high schools in California. ELs were found to have a negative effect on the academic performance of schools even after controlling for several school characteristics and interactions. In fact, interactions in which ELs impacted API demonstrated a significant and large negative effect. Since the API is composed of student test scores, it can be said that ELs are, on average, performing poorly. Thus, the substandard performance of ELs on California's standardized tests results in them negatively affecting their school's academic performance. Nevertheless, this study also highlighted the devastating and more important effects that arise in schools with scarce resources or schools with a large concentration of poverty.

In light of these findings, it is difficult to say whether the national one-year mandated structured English immersion program of bilingual education in California is superior to transitional bilingual education programs. It is impossible to gauge the progress of ELs with this data. However, one thing is clear: the structured English immersion programs in place in California today are not resulting in ELs reaching grade-level proficiency. If ELs were on grade level they would not have such a large negative effect on schools' academic performance; they would perform well on standardized tests of academic content matter. It may be that the English immersion programs place too much emphasis on English acquisition and neglect academic content acquisition.

However, the fact that ELs in high schools have a negative effect on schools' academic performance may not be entirely attributable to a failing education. ELs in high school are most likely recent immigrants, and their academic content knowledge before beginning the structured English immersion program may be far behind their English speaking peers. If this is the case, it may be that ELs are indeed making substantial progress in English immersion programs in a short amount of time. However, if this is so, at the end of one year ELs are still not at the level they should be. The question remains: What is the level of English proficiency that ELs attain after one year? If ELs have not acquired adequate English proficiency they will only fall further behind if they are transitioned into mainstream courses with native-English-speaking peers.

Alternatively, the data may simply reflect a characteristic or set of characteristics of ELs that predisposes them to perform poorly. It may be that ELs receive little parental support, have negative attitudes toward education, or have low educational aspirations. Either way, the underperformance of ELs may be the result of factors not related to the education they receive.

Further research should attempt to elucidate the dynamics behind the underperformance of ELs and examine the extent to which structured English immersion harms and benefits ELs. A follow-up study would benefit from including the length of time students have been designated ELs and their performance when they were first designated ELs in order to gauge their progress.

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Appendix A: Tables

Table A1. Summary of Studies.

Study	Outcome Measure	Method	Data	Results
Robert E. Slavin & Alan Cheung (2003)	Reading in English	Review of previous research using strict standards for inclusion (studies had to compare bilingual instruction to English-only instruction with English language learners; evidence had to show that the two groups were comparable in reading performance before the treatments began; treatments had to have been in place for at least one year; and researchers had to use a quantitative, objective measure of reading performance).	17 studies of elementary reading instruction met inclusion requirements.	13 studies favored bilingual instruction while 4 found no differences between bilingual instruction and English-only programs.
Wayne Thomas & Virginia Collier (2002)	Academic achievement in math, science, social studies, and literature	Researchers tracked students from kindergarten or 1st grade through 4th or 5th grade. A collaborative research agreement was established with five school districts over five years. Data on each language minority student were collected, including socioeconomic status, primary language, secondary language proficiency upon entry, prior schooling, etc. Measures of student achievement included standardized test scores.	Data were collected for over 210,000 students.	Results overwhelmingly favored bilingual instruction over English immersion. Positive effects on student achievement were observed in English literacy and academic core content when using bilingual programs.
Amado M. Padilla & Rosemary Gonzalez (2001)	High school academic performance (GPA)	A secondary analysis of an existing data set of 7,140 questionnaires administered to high school students. The original study was conducted by Stanford researchers to gather information about student, family, and school variables that contributed to the academic achievement of students in three different school/community settings.	Only 2,167 questionnaires were included in the study from students who self-identified as being of Mexican descent and who reported enrollment in either the general or college preparatory track.	College track students who received some ESL/bilingual education reported higher grades than students who had not received any second-language instruction.
Jay P. Greene (1997)	Academic achievement of core academic content	A meta-analysis of existing studies. To meet inclusion requirements studies had to compare students in a bilingual program to a control group of similar students, differences between the treatment and control groups had to be controlled statistically or assignment to treatment and control groups had to be random, results had to be based on standardized test scores in English, and differences between the scores of treatment and control groups had to be determined by applying appropriate statistical tests.	Only 11 of 75 studies met inclusion requirements. The 11 studies included standardized test scores from 2,719 students, 1,562 of which were enrolled in bilingual programs in 13 different states.	Students in bilingual education programs performed significantly better on standardized tests than similar children who are taught only in English.
Ann C. Willig (1985)	Reading in English, language in English, and academic content achievement	A meta-analysis of existing studies.	23 studies were included in the analyses.	There were overall significant, positive effects for bilingual education programs for tests in English and tests in Spanish. Tests in English showed significant effects favoring bilingual education over English immersion for reading in English, language in English, mathematics in English, and total achievement in English. Tests not in English found significant effects in favor of bilingual education for listening comprehension, reading, writing, total language, mathematics, social studies, and attitudes toward school or self.

Table A2. Interaction Effects in Elementary Schools.

	Effect on API[a]
% English Learners by % Students on Free/Reduced Lunch	
Low % English Learners by Low % Students on Free/Reduced Lunch	-13
Low % English Learners by High % Students on Free/Reduced Lunch	-28
High % English Learners by Low % Students on Free/Reduced Lunch	-77
High % English Learners by High % Students on Free/Reduced Lunch	-92
% English Learners by % Asian Students	
Low % English Learners by Low % Asian Students	-8
Low % English Learners by High % Asian Students	40
High % English Learners by Low % Asian Students	-71
High % English Learners by High % Asian Students	-24
Average Class Size (Grades K-3) by % Students on Free/Reduced Lunch	
Small Class Size (Grades 4-6) by Low % Students on Free/Reduced Lunch	-1
Small Class Size (Grades 4-6) by High % Students on Free/Reduced Lunch	-16
Large Class Size (Grades 4-6) by Low % Students on Free/Reduced Lunch	0
Large Class Size (Grades 4-6) by High % Students on Free/Reduced Lunch	-15
Average Class Size (Grades 4-6) by % Teachers with Emergency Credentials	
Small Class Size (Grades 4-6) by Low % Teachers with Emergency Credentials	39
Small Class Size (Grades 4-6) by High % Teachers with Emergency Credentials	20
Large Class Size (Grades 4-6) by Low % Teachers with Emergency Credentials	49
Large Class Size (Grades 4-6) by High % Teachers with Emergency Credentials	29

Note: A "low" value is one standard deviation below the mean; a "high" value is one standard deviation above the mean.
[a] Effects on API were calculated as follows: [(Coefficient Variable 1 * Value Variable 1) + (Coefficient Variable 2 * Value Variable 2) + (Interaction Coefficient * Value Variable 1 * Value Variable 2)].

Table A3. Interaction Effects in Middle Schools.

	Effect on API[a]
% English Learners by % Students on Free/Reduced Lunch	
Low % English Learners by Low % Students on Free/Reduced Lunch	-32
Low % English Learners by High % Students on Free/Reduced Lunch	-110
High % English Learners by Low % Students on Free/Reduced Lunch	-87
High % English Learners by High % Students on Free/Reduced Lunch	-165

Note: A "low" value is one standard deviation below the mean; a "high" value is one standard deviation above the mean.
[a] Effects on API were calculated as follows: [(Coefficient Variable 1 * Value Variable 1) + (Coefficient Variable 2 * Value Variable 2) + (Interaction Coefficient * Value Variable 1 * Value Variable 2)].

Table A4: Interaction Effects in High Schools

	Effect on API[a]
% English Learners by % Hispanic/Latino Students	
Low % English Learners by Low % Hispanic/Latino Students	9
Low % English Learners by High % Hispanic/Latino Students	58
High % English Learners by Low % Hispanic/Latino Students	-33
High % English Learners by High % Hispanic/Latino Students	16
% English Learners by % Students on Free/Reduced Lunch	
Low % English Learners by Low % Students on Free/Reduced Lunch	0
Low % English Learners by High % Students on Free/Reduced Lunch	9
High % English Learners by Low % Students on Free/Reduced Lunch	-43
High % English Learners by High % Students on Free/Reduced Lunch	-35
% English Learners by % Asian Students	
Low % English Learners by Low % Asian Students	-2
Low % English Learners by High % Asian Students	69
High % English Learners by Low % Asian Students	-45
High % English Learners by High % Asian Students	26

Note: A "low" value is one standard deviation below the mean; a "high" value is one standard deviation above the mean.
[a] Effects on API were calculated as follows: [(Coefficient Variable 1 * Value Variable 1) + (Coefficient Variable 2 * Value Variable 2) + (Interaction Coefficient * Value Variable 1 * Value Variable 2)].

Appendix B: 2004-2005 API Glossary – Demographic Characteristics (California Department of Education, 2005a)

English Learners

This item is the percentage of students in the school who are designated as English learners (ELs), formerly known as limited-English-proficient (LEP) students, taken from the 2005 STAR Program student answer document.

An EL is a student for whom there is a report of a primary language other than English on the state-approved Home Language Survey and who, upon initial assessment by the appropriate state assessment (currently the *California English Language Development Test* or *CELDT*) and from additional information when appropriate, has been determined to lack the clearly defined English language skills of listening, speaking, reading, and/or writing necessary to succeed in the school's regular instructional programs.

Participants in Free or Reduced-Price Lunch

This item is the percentage of students in the school who participated in the free or reduced-price lunch program, also known as the National School Lunch Program, taken from the 2005 STAR Program student answer document. Parent education level and free or reduced-price lunch are used to represent student socioeconomic status in determining subgroups and similar group rankings.

Parent Education Level

This item is the percentage of responses in the school indicating the education level of the student's most educated parent, taken from the 2005 STAR Program student answer document. Parent education level and free or reduced-price lunch are used to represent student socioeconomic status in determining subgroups and similar school rankings.

Ethnic/Racial

This item is the percentage of students in the school in each category taken from the 2005 STAR Program student answer document. Percentages for ethnic/racial may not sum to 100 due to responses of "Other," "Multiple," "Decline to State," or non-response.

Average Class Size

This item is the percentage of students in the school who were counted as part of the school enrollment on the October 2004 CBEDS data collection and who have been continuously enrolled since that date, taken from the 2004 enrollment data reported on the Professional Assignment Information Form (PAIF), which is part of the 2004 CBEDS data collection. The item "Core academic courses in departmentalized programs" reflects average class size in the following subject areas: English, foreign languages, mathematics, science, and social science.

Teachers with Emergency Credentials

This item includes the percentage of teachers in the school with emergency credentials, taken from the 2004 CBEDS data collection.