DOCUMENT RESUME

ED 478 832 HE 036 087

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| AUTHOR | Armstrong, William B.; Carty, Heidi M. |
| TITLE | Reconsidering the SAT-I for College Admissions: Analysis of Alternate Predictors of College Success. |
| PUB DATE | 2003-04-00 |
| NOTE | 28p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, IL, April 21-25, 2003). |
| PUB TYPE | Reports - Research (143) -- Speeches/Meeting Papers (150) |
| EDRS PRICE | EDRS Price MF01/PC02 Plus Postage. |
| DESCRIPTORS | College Admission; *College Applicants; *College Entrance Examinations; College Freshmen; Higher Education; Prediction; *Test Use; Validity |
| IDENTIFIERS | *Scholastic Assessment Tests |

ABSTRACT

The University of California is engaged in the elimination of the Scholastic Assessment Test I (SAT-I) Verbal and Mathematics tests as a requirement for freshman admission. Opponents of the SAT-I argue that the tests do not measure the outcomes of the high school curriculum and hence do not reflect student learning in secondary school. Proponents counter that while the SAT-I tests are imperfect predictors, they perform a useful role in selecting applicants who have a strong likelihood of college success. This paper discusses the policy background of this debate and compares criterion-related validity evidence for the SAT-I and SAT-II tests. The study used data from applicant and enrolled student records at a large, highly selective research university for approximately 18,000 first-time freshmen. The findings suggest that although the SAT-II tests show stronger criterion-related validity than the SAT-I tests, the differences are modest. It is also found that the predictive validity of the SAT-I mathematics test improves for students from lower income levels and socioeconomic backgrounds. In addition, data from the third achievement or subject test of the SAT-II indicate a low correlation of scores in this test with freshman year grade point average (GPA) and high school GPA. This suggests that the third achievement test may be less of a curricular measure, or of less value, in accounting for variance in first-year performance. (Contains 7 tables and 11 references.) (Author/SLD)

# Reconsidering the SAT-I for College Admission: Analysis of Alternate Predictors of College Success

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Presented at the Annual Meeting of the
American Educational Research Association
Chicago, IL
April, 2003







## Abstract

The University of California is engaged in the elimination of the SAT-I Verbal and Mathematics tests as a requirement for freshman admission. Opponents of the SAT-I argued that the tests do not measure the outcomes of the high school curriculum and hence did not reflect student learning in secondary school. Proponents counter that while the SAT-I tests are imperfect predictors, they perform a useful role in selecting applicants who have a strong likelihood of college success. This paper discusses the policy background of this debate, and compares criterion-related validity evidence for the SAT I and SAT II tests. The findings suggest that although the SAT II tests show stronger criterion-related validity than the SAT I tests; the differences are modest. It was also found that the predictive validity of the SAT I math test improves for students from lower income levels and socio-economic backgrounds. In addition, data from the third achievement or subject test of the SAT II indicate a low correlation of scores on this test with freshman year GPA and high school GPA. This suggests that the third achievement may be less of a curricular measure or of less value in accounting for variance in first-year performance.

## Background

In 2001, the President of the University of California proposed eliminating the use of the SAT-I Verbal and Quantitative tests for use in freshman admissions decisions. He and other critics of the SAT-I tests argued that no longer requiring the SAT I and using "a more relevant standardized test will help strengthen our high schools, focus students' attention on mastering subject matter, and create a stronger connection between our children's accomplishments in school and their likelihood of succeeding in college." (Atkinson, 2001). This particular criticism of the SAT-I rests on the argument that the

test is not based on a curriculum of study, and hence neither measures achievement nor hard work in school. Thus critics contend, many students who have excelled in high school often doubt their abilities simply because they did not score well or as well as expected on the SAT I. Some critics contend that the SAT I has been improperly used as a measurement of high school achievement, thus it has a deleterious and biased effect on access to the more selective institutions of higher education (Colvin, 1997).

**Perspectives**

Some scholars have found however, that the SAT I does reflect achievement, and is a useful tool both for measuring what a student has learned in school, but also adequately portends their future success in college (Bridgeman, McCamley-Jenkins, and Ervin, 2000). They further suggest that the criticisms of the SAT are based on an inaccurate interpretation of predictive validity. They suggest that the tests themselves are merely a tool used in order to make inferences. If institutions misuse the tool by employing it in the wrong situation, it is not the tool that is defective, but rather the inferences made by the user of the tool. Proponents of the SAT I point to further research that supports the predictive validity value of the SAT-I for college GPA and college graduation (Burton and Ramist, 2001, Widaman, 1998).

The SAT, along with other standardized tests used as part of the college admissions process, has long been the focus of criticism throughout the years. In recent years, criticism of the SAT and standardized tests in general used for college admissions decisions has focused on the argument that the use of such tests in admissions decisions restricts the access of students historically under-represented in US higher education

(Gandara & Lopez, in press; Lemann, 1999). However, others contend that differences in performance on the SAT may be indicative of pervasive ethnic and socioeconomic disparities in educational achievement and opportunity (Zwick, 2001).

Another area of controversy focuses on the use of the third achievement or subject area test of the SAT-II. Recently, the university began assigning less weight to SAT-I, and more to the SAT-II, also known as the achievement tests. Applicants must take the SAT-II in math and writing, plus a third in any subject they choose. The third achievement test is generally viewed as an opportunity for the applicant to demonstrate an area of focused study or high ability. For example, many bilingual or students for whom English is not their first language choose to take the Spanish, Chinese, or Korean language and listening tests. Some have expressed concern that this gives an edge or advantage to bi-lingual students who may achieve very high scores on the language test without ever having taken a language course in high school. This "bilingual edge" is becoming another focus of debate in the continuing saga of equity in college admissions in California (Golden, 2001; Colvin, (1997). According to The College Board, the language tests are designed to assess language competency for native English speakers who have studied a foreign language in high school. Thus do the debates on the merit and fairness of the SAT-I and SAT-II achievement tests continue.

**Theoretical Framework**

Although many of the contemporary criticisms of the SAT have been around for several years, most recently critics have voiced the concern that the SAT tests are not properly aligned with the high school curriculum and thus do not reflect what a student

has studied in school. These arguments are based on the notion of a correspondence or alignment between what a student studies in school, and the assessment test used to determine or assess learning of the subject matter. Pertinent to an understanding of the relationship between predictor and criterion is Point –to-Point theory (Asher & Scriarrino, 1974). This theory suggests that predictive validity is enhanced when the predictor shares more common space with the criterion. Point-to-Point theory suggests that the use of scores on a standardized placement tests to predict the normative outcome variable of course grade or overall GPA will generally result in low to modest predictive validity coefficients and hence diminished predictive validity. The notion that the SAT-II subject tests are more highly correlated with the freshman grades is based, at least implicitly, on the premise that the SAT-II tests are more closely aligned with the secondary school curriculum. A current critique of the SAT focuses on what some believe is a lack of correspondence or overlap between what is taught in school, and what is measured on the tests (Lemann, 1999). SAT critics maintain that if we increase the correspondence between what a student studies in high school and what is measured on standardized tests of achievement, then predictive validity will improve.

Predictive validity is essentially an attempt to approximate the future in the present. Thus to the extent that current assessment tests mirror the future demands of college courses, predictive validity coefficients should be enhanced. Based on the perceived closer alignment of the SAT-II subject area tests with the high school curriculum, contemporary critics of the use of the SAT-I at the University of California contend that the SAT-II represents a much fairer and accurate assessment of what students learn in school, and therefore should replace the SAT-I. The SAT-I is viewed by

some critics as primarily a measure of aptitude rather than achievement (Lemann, 1999; Gandara (in press). They argue that the SAT II, which focuses on knowledge of specific subject matter such as mathematics, English, history, science, and foreign language, measures student accomplishment and begins to approximate an appropriate test for university admissions. This study tests this assertion by focusing on the relative predictive validity of the SAT-I and SAT-II subtests for explaining variance in first year grade point average. To test the assertion that the SAT II is a better measure of what a student studied in high school, the correlation coefficients for the SAT II, SAT I and high school grade point average are also included and analyzed.

**Research Questions**

Despite these competing points of view, the central question for many of the highly selective universities is how well the various standardized assessments predict success in college. Therefore the central question guiding this inquiry focuses on the comparative value of each of the various standardized assessment tests in predicting college success. The criterion or dependent variable for college success was first year grade point average.

There are three primary research questions that guided this study.

1. How well do commonly used standardized college admission tests explain variance in freshman grades?

2. Do tests of "curriculum" demonstrate greater predictive validity than tests of "aptitude" in explaining variance in freshman student performance?

3. What is the relation of the third achievement test of the SAT-II to high school and first year college grades?

**Data Sources**

Using data obtained from applicant and enrolled student records in a large, highly selective research university, this paper presents evidence to test the hypothesis that the SAT-II is of greater predictive validity than the SAT I. Part one of the study used six years of test score data merged with institutional records that included transcripts of college courses and grades earned for the fall, 1996-2001 entering freshman cohorts. The merging of these data enabled the investigators to determine the criterion-related validity evidence of the SAT I and SAT II entrance exams with respect to first year grade point average. Part two of the study gathered and analyzed evidence to test the hypothesis that scores on the SAT II tests would demonstrate greater criterion-related predictive validity with freshman year performance compared with the SAT I.

Part two of the study provides data on the correlation coefficients used to test the argument that the SAT II is more reflective of what a student has studied in school. Guided by the theoretical constructs provided by Point-to-Point theory, data were analyzed to determine the relation between the various SAT II subtests, particularly the third achievement test, and performance in college. Additional data were examined to determine if significant differences in the amount of variance accounted for in GPA could be found for students from different socio-economic backgrounds on both the SAT-I and SAT-II. Findings were compared with the predictive validity found for the SAT I on the same outcome measures.

## The Relative Contribution of High School Grades, SAT I and SAT II Scores in Predicting Success at UCSD

Part I of this research project provides evidence on the relative contribution of high school grade point average, SAT I and SAT II scores in predicting success at UCSD for first-time freshmen.

### Methods

The official high school grade point average, SAT I, and SAT II scores, of approximately 18,000 first-time freshmen who enrolled at the University of California, San Diego (UCSD) between fall 1996 and Fall 2001 were used for this study. High school grade point average is an uncapped, honors-weighted, GPA measured on a scale ranging from 0.0 to 4.0; however, due to honors courses HSGPA may exceed 4.0. The SAT I is a combination of the students' verbal and math scores. The SAT II is a combination of the students' English and math scores as well as a score on a third achievement test of the students' choosing.

Hierarchical regression analysis was used for this predictive validity study. One of the major uses of regression analysis in predictive research is for the selection of applicants, whether that be for college, a job or some training program. The regression equation is used so that the basis of an applicant's status on a set of predictors may be used to predict his or her performance on some criterion (Pedhazur, 1997, p. 138). High school GPA, and composite SAT I and SAT II scores served as the predictor variables to measure the amount of variance accounted for in predicting college success. Success in

college was defined as a students' spring grade point average as measured at the end of their first academic year attending UCSD. The effects of high school grade point average, SAT I and SAT II were analyzed independently and in combination with each other. Predictor variables were entered into each regression analysis in the order displayed in Table 1 (e.g., for the 7th regression analysis, HSGPA was entered into the equation first followed by SAT I and then SAT II) for each given year.

**Results**

Results from each regression analysis are displayed in Table 1 (see appendix). The table displays the explained variance in first-year UCGPA that is accounted for by the three predictor variables. Explained variance, also referred to as the coefficient of determination or $R^2$, represents the proportion of total variance in the criterion or outcome variable (e.g., UCGPA in this study) that is explained or accounted for by a predictor variable (e.g., HSGPA, SAT I and SAT II). For this study the three predictor variables included high school GPA, composite SAT I and SAT II scores for all first-time freshmen entering UCSD between fall 1996 and fall 2001.

Looking at each predictor variable as the sole predictor in the model, as shown in Table 1, HSGPA accounts for the greatest amount of variability in all five years and was the single best predictor for the pooled data ($R^2 = 0.113$). The next single best predictor was the SAT II composite scores, which accounted for the second largest amount of variability for all five years in with respect to the pooled-data ($R^2 = 0.097$). Finally, SAT I composite scores were ranked third accounting for only 6.5% of the variance in UCGPA.

With respect to the models including a combination of predictor variables, rows (4) through (7) in Table 1, HSGPA and SAT II scores account for the greatest amount of variability ($R^2 = 0.192$) in predicting UCGPA, beyond any single predictor variable for all five years and with the pooled data. The next best set of predictors includes HSGPA and SAT I accounting for 17% of the variability with the pooled data. When only using SAT I and SAT II scores in the model, the proportion of explained variance by SAT I scores is not significantly different from zero. This result could be due to the multicollinearity between SAT I and SAT II scores. Multicollinearity may lead to difficulties in the estimation of regression statistics. The least ambiguous definition of multicollinearity is that it refers to the absence of orthogonality in a set of independent (predictor) variables. When two variables are orthogonal, they are independent of each other and the correlation between them is zero. Multicollinearity only refers to the interrelations among the independent/predictor variables only (Pedhazur, p. 233).

Finally, when including, HSGPA, SAT II and SAT I scores into the equation, SAT I does not increase the amount of variability accounted for in predicting UCGPA ($R^2 = 0.192$) after the effects of HSGPA and SAT II scores are taken into account. Adding SAT I scores into the equation does not add any incremental power in predicting UCGPA. Again, this may be due to the multicollinearity between SAT I and SAT II scores.

Overall the best model in predicting first-time freshman GPA includes HSGPA and SAT II scores, which accounted for 19% of the variability, approximately one-fifth

of the total variance in UCGPA. In accounting for only one-fifth of the variance, roughly four-fifths is left unexplained. This relatively low level of predictive power tends to be the norm in admissions research. One of the known reasons for the low predictive power of HSGPA and SAT scores, particularly at UCSD is a restriction of range problem. Students with low test scores and grades often do not apply to selective universities such as UCSD. Of the students who do apply, only those with relatively high grades and test scores tend to be admitted. As a result almost all admitted students have high grades and test scores leaving little variability and a limited range with which to fully assess the predictive validity of these admission criteria.

**Discussion**

A review of the results suggests three main conclusions. First, high school grade point average was the single best predictor of success as measured by first-year GPA at UCSD. SAT II was the second best predictor of success.

Secondly, using both test scores and grades in combination increases the proportion of explained variance beyond that which is possible with a single variable. Of the SAT I or SAT II, which is the better predictor when coupled with high school grades? Results showed that SAT II scores and high school grades explain the greatest amount of variability in predicting first-year grades, compared with the SAT I and high school grades.

Additionally, it was found that SAT I scores do not significantly increase the amount of explained variability in predicting success when SAT II scores and high school

grades are also included in the prediction equation. Adding SAT I into the equation does not improve the prediction.

**Summary of Results**

- High school grade point average was the single best predictor for three of the five years studied (1997, 1998 & 2000) and the single best predictor for the pooled data.
- SAT II was the single next best predictor for two of the five years studied (1996 & 1999).
- SAT II scores and HSGPA account for a greater proportion of variance in predicting UCSD freshmen grades, compared to SAT I scores and HSGPA across all years studied.
- The three predictors combined (HSGPA, SAT I and SAT II), account for the greatest amount of variance in predicting UCSD freshmen grades; however, for three of the five years studied, the amount of variability accounted for by SAT I scores was not found to be significantly different from zero (1996, 1997 & 1998).
- SAT I scores add very little to the prediction equation in predicting UCSD freshmen grades when HSGPA and SAT II scores are also entered into the equation.
- Overall, HSGPA and SAT II scores account for the greatest amount of variability (19%) in predicting UCSD freshmen grades in the pooled, 5-year data.
- Adding SAT I into the equation does not improve the prediction with the pooled data.

HSGPA and SAT II only account for approximately one-fifth of the total variance in UCSD freshmen grades while four-fifths is still unexplained. (This could be due to a restriction of range problem found with selective admissions practices at research universities. Students with low GPAs and test scores tend not to apply to selective universities, and the grades and test scores of the admitted group are further truncated through the selective admissions process.

**The Relation of SAT I and SAT II sub-tests to High School and College Grades**

The second set of analyses examined the inter-correlation among the various SAT I and SAT II subtests and the coefficients of these subtests with high school and first year grades. Correlation matrices were produced for different student groupings to note differences between demographic sub-groupings such as first generation college students, students from high vs. low performing high schools, income level, and first language learned at home.

**Method**

This part of the investigation focused on the correlation coefficients derived from scores of first time students on the SAT I and SAT II subtests and the official high school GPA and first year college GPA of this entering cohort. Pearson Product-Moment correlation coefficients were obtained and compared to estimate the inter-correlations of these measures, and to compare the relationship of the SAT I and the SAT II to high school and college GPA's. The correlation matrices include coefficients among the SAT I and SAT II subtest scores, and the official high school GPA and first year college GPA of the fall, 2001 freshman class. This part of the analysis was intended to provide

evidence for the research question that focused on the comparative criterion-related validity of aptitude versus curriculum-based measures of student knowledge. The correlation matrices also include the coefficients for the SAT II third achievement test, and high school and college GPA's. These data were included to provide data for research question three of this investigation that focused on the criterion-related validity evidence of the third achievement test with respect to this exam's value both as a measure of student effort within their high school curriculum and a predictor of first year performance.

**Results**

The correlation coefficients derived for the entire cohort of the first time entering freshmen cohort are presented in table 2. Included in this table are descriptive data that include the means and standard deviations for the various independent and dependent variables. The descriptive data for both the SAT I and SAT II subtests indicate that the mean scores on the math tests and the third achievement test were higher than the scores on the English and verbal portions of the exams. As was found in part one of this investigation, high school GPA demonstrates the strongest relationship with first year college GPA (.299 or about 9% of the variance). The SAT II English and SAT I Verbal tests show a stronger relationship with first year GPA than the SAT I and SAT II mathematics tests. However, with respect to high school GPA, the coefficients derived from the respective math test scores are approximately the same as those found for the English and verbal subtests. Although students tended to achieve relatively high scores on the third achievement test (m=614, sd.=109), with the exception of the SAT I math

test, the predictive validity coefficients suggest that this accounts for the least amount of the variance in both high school and college GPA compared with the other measures.

**Analysis by Student Sub-Grouping**

To determine if the predictive validity coefficients between the SAT I and SAT II exams and high school and college GPA varied for different demographic groupings, separate analyses were conducted using student sub-populations. These sub-populations included students disaggregated into the following categories:

1. **First Generation College Status.** This grouping compares the performance of students who were the first members of their family to complete college with those whose parents had completed college. These data are in table 3.
2. **High School Environment** This construct groups high schools by a combination of school level factors including the breadth of the curriculum, socio-economic characteristics, and college attendance rates of graduates. Using this score high schools are grouped in quintiles for analysis with the highest achieving high schools in the first quintile. These data are in tables 4-5.
3. **Income level.** Students were grouped by reported household income. These data are shown in table 6
4. **First Language Learned.** Students were grouped according to the first language they reported learning at home. The results of this analysis are shown in table 7.
5. **First Generation and Low Income.** This grouping includes students who were both the first generation in their family to complete college and also came from a low-income household. Data from this analysis are given in table 8.

**Results from Analysis of Student Sub-Groupings**

The following section describes the results of the analysis for the student sub-populations studied in this investigation.

**First Generation College Status**. In general, first generation college students tended to achieve lower high school GPA's and test scores than non-first generation students as shown in table 3. In addition, the predictive validity coefficients for SAT I, SAT II, and high school grades with respect to the dependent variables of high school and college GPA were generally lower for first generation college attendees. This was particularly true in the verbal and English sub-tests of the SAT. It is interesting to note however that the criterion related validity of the SAT I math test for first-generation students with respect to college GPA was stronger than the coefficient found for non-first generation students. However in both instances the amount of variance explained was relatively small.

**High School Environment**. Analysis of the correlation coefficients by the ranking of high schools did not suggest a particular pattern with respect to the SAT. Interestingly, once high school are disaggregated into quintiles according to the environmental construct, the SAT I math test appears to be a somewhat stronger predictor of first year GPA in lower performing high schools. There is a significant difference in the predictive validity coefficient in first quintile high schools (-.001) and fifth quintile high schools (.228). Moreover, for the lowest performing high schools, the SAT I math score shows a somewhat stronger relationship with college GPA than high school GPA.

**Income Level**. Across all income levels, the SAT II tests account for a somewhat higher amount of variance than the SAT I tests. The exception to this general pattern is found for the third achievement test. Although students from all income levels achieve approximately similar scores on this sub-test, the coefficients between both the third achievement test, high school, and college GPA's decrease as income levels drop.

However it is interesting to note that as income level drops, the relative strength of the coefficients of the SAT I increase, particularly the SAT I math test. This suggests that the SAT I math test may have greater predictive validity for low-income students than the third achievement test. As shown in table 7, for students in the first generation and low-income category, the relative difference between the coefficients for the two exams narrows considerably with test scores explaining a greater amount of variance compared with non first generation, low-income students. Also, the coefficients between high school GPA and first year GPA are lower for students who are both first generation and low income. In the case of first generation and low-income students, the observed coefficient for first year GPA and the SAT II math test exceeds that of high school GPA. The predictive validity coefficient between scores on the third achievement test and first year GPA is much lower for the first generation, low income students compared with non first generation, low income students.

**Primary Language**. The SAT II exams accounted for more variance in first year college GPA than the SAT I for all three language groupings as shown in table 6. The third achievement test accounts for a smaller proportion of variance in both high school and college GPA, although non-native speakers of English have higher scores on this exam than the other linguistic groupings. Analysis of the coefficients among the exams also indicates that scores on the third achievement test are less related to scores on the other SAT subtests when disaggregated by linguistic grouping.

## Summary and Implications

Although the SAT-II achievement tests were found to be a better predictor of freshman grade point average than the SAT-I, the differences between the predictive validity coefficients for the two sets of exams with respect to freshman GPA were relatively modest. When analyzed by income level, the relative strength of the coefficients for the SAT I increased relative to the SAT II at lower levels of income. A similar pattern was noted with respect to the high school rankings and for first generation, low-income students. The general exception to this pattern was the predictive validity coefficients for the SAT II third achievement test. Although the predictive validity coefficients for the third achievement test and college GPA were somewhat lower for the total cohort, when analyzed by demographic categories, it was found that the relationship between scores on this exam and high school and college GPA was significantly lower depending on the high school environment, income level, and native language of the student. This finding suggests that the third achievement test for certain groups is not as useful in predicting freshman performance or as reflective of high school grades. This finding merits further investigation to better understand this relationship.

## Limitations of this Study

The populations selected for this study were from a single institution, thus the findings may be limited to highly selective universities that use standardized admissions test in the selection process. Also, as discussed earlier, the competitive nature of admissions to the university has resulted in a restriction of range in the distribution of high school grades and test scores of admitted and registered students. This truncated

distribution has the effect of lowering the predictive validity coefficients. This may lead to errors in interpretation of the findings. The relatively low correlation coefficients found for the third achievement test, particularly for certain demographic groupings, needs further investigation to illuminate the potential lack of correspondence between this exam and student high school and college grades.

**Further Research**

Data from this study may be useful to further inform the current debate taking place in higher education over the use of standardized tests as adequate measures of achievement and academic promise. One area for additional research might include the relatively stronger predictive validity of the SAT I math test for students from lower socio-economic groupings. Another possible area for future research may be the lower level of correspondence between the third achievement test and grades in both high school and college. Further research may also provide insights into the development of an admissions exam that better reflects the high school curriculum or state high school graduation standards and requirements. Improving the correspondence between what student studies in high school, and is subsequently measured on exams, may be of greater value in evaluating the effectiveness of the high school curriculum, and in selecting students for admission to the university.

The findings from this study also suggest the importance of identifying other predictor variables or assessments that demonstrate a relationship to college learning outcomes, retention, and persistence. Other indicators included in a comprehensive review might include a student's rank in their high school class, leadership, special

talents, writing ability, and perseverance. This research should be continued to further understand the relation of certain predictor variables to success at the university while admitting students who can enrich the university environment with a variety of skills and backgrounds.

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Table 1

Explained Variance (R-Square) in UCSD First-Year GPA
Accounted for by HSGPA, SAT I and SAT II Scores
1996 through 2001

| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 1996-2001 |
|---|---|---|---|---|---|---|---|
| (1) **HSGPA** | 0.101 | 0.146 | 0.122 | 0.080 | 0.099 | 0.085 | 0.113 |
| (2) **SAT I** | 0.073 | 0.054 | 0.047 | 0.074 | 0.069 | 0.051 | 0.065 |
| (3) **SAT II** | 0.104 | 0.089 | 0.083 | 0.104 | 0.089 | 0.077 | 0.097 |
| (4) **SAT I + SAT II** | 0.104 * | 0.088 * | 0.084 * | 0.105 * | 0.092 * | 0.077 * | 0.089 |
| (5) **HSGPA + SAT I** | 0.157 | 0.191 | 0.170 | 0.158 | 0.170 | 0.144 | 0.171 |
| (6) **HSGPA + SAT II** | 0.181 | 0.216 | 0.192 | 0.186 | 0.186 | 0.175 | 0.192 |
| (7) **HSGPA + SAT I + SAT II** | 0.181 * | 0.216 * | 0.194 * | 0.188 | 0.188 | 0.175 * | 0.192 |
| **SAT I increment: [(7)-(6)]** | **0.000** | **0.000** | **0.002** | **0.002** | **0.002** | **0.000** | **0.000** |

** SAT I not statistically significant in prediction equation ($p \geq 0.05$).*

Table 2

Correlations of SAT I, SAT II and GPA
Total
Fall 2001

| | *Correlations* | | | | | | | *Descriptive* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SAT I Verbal | SAT I Math | SAT II English | SAT II Math | SAT II Test 3 | 1st Year GPA | | N | Mean | Standard Deviation |
| **All Applicants** | | | | | | | | | | |
| HS GPA | .374 | .405 | .404 | .417 | .323 | .299 | HS GPA | 4,028 | 3.71 | 0.43842 |
| SAT I Verbal | | .570 | .791 | .539 | .483 | .225 | SAT I Verbal | 4,028 | 586 | 96.96 |
| SAT I Math | | | .566 | .869 | .497 | .157 | SAT I Math | 4,028 | 625 | 93.39 |
| SAT II English | | | | .562 | .472 | .266 | SAT II English | 4,028 | 591 | 100.72 |
| SAT II Math | | | | | .524 | .192 | SAT II Math | 4,028 | 615 | 99.71 |
| SAT II - Test 3 | | | | | | .173 | SAT II - Test 3 | 4,028 | 614 | 109.02 |
| | | | | | | | 1st Year GPA | 4,028 | 3.02 | 0.52592 |

Table 3

Correlations of SAT I, SAT II and GPA
First Generation College Status*
Fall 2001

| | *Correlations* | | | | | | | *Descriptive* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SAT I Verbal | SAT I Math | SAT II English | SAT II Math | SAT II Test 3 | 1st Year GPA | | N | Mean | Standard Deviation |
| **First Generation** | | | | | | | | | | |
| HS GPA | .335 | .398 | .366 | .405 | .217 | .253 | HS GPA | 860 | 3.62 | 0.45470 |
| SAT I Verbal | | .583 | .788 | .529 | .326 | .110 | SAT I Verbal | 860 | 528 | 98.37 |
| SAT I Math | | | .556 | .875 | .328 | .194 | SAT I Math | 860 | 574 | 99.27 |
| SAT II English | | | | .534 | .322 | .166 | SAT II English | 860 | 534 | 95.41 |
| SAT II Math | | | | | .349 | .228 | SAT II Math | 860 | 566 | 100.39 |
| SAT II - Test 3 | | | | | | .128 | SAT II - Test 3 | 860 | 594 | 122.20 |
| | | | | | | | 1st Year GPA | 860 | 2.86 | 0.57019 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Not First Generation** | | | | | | | | | | |
| HS GPA | .371 | .393 | .404 | .410 | .350 | .307 | HS GPA | 3,168 | 3.74 | 0.43037 |
| SAT I Verbal | | .509 | .767 | .492 | .531 | .221 | SAT I Verbal | 3,168 | 602 | 90.20 |
| SAT I Math | | | .520 | .855 | .551 | .103 | SAT I Math | 3,168 | 639 | 86.60 |
| SAT II English | | | | .526 | .512 | .255 | SAT II English | 3,168 | 606 | 96.58 |
| SAT II Math | | | | | .576 | .141 | SAT II Math | 3,168 | 628 | 95.37 |
| SAT II - Test 3 | | | | | | .175 | SAT II - Test 3 | 3,168 | 620 | 104.56 |
| | | | | | | | 1st Year GPA | 3,168 | 3.06 | 0.50533 |

**Neither parent a college graduate (2 year or 4 year).*

Table 4

Correlations of SAT I, SAT II and GPA
High School Quintile*
Fall 2001

| | *Correlations* | | | | | | | *Descriptive* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SAT I Verbal | SAT I Math | SAT II English | SAT II Math | SAT II Test 3 | 1st Year GPA | | N | Mean | Standard Deviation |
| **First Quintile** | | | | | | | | | | |
| HS GPA | .415 | .435 | .460 | .457 | .384 | .330 | HS GPA | 1,754 | 3.73 | 0.42934 |
| SAT I Verbal | | .490 | .767 | .480 | .470 | .170 | SAT I Verbal | 1,754 | 605 | 90.23 |
| SAT I Math | | | .508 | .849 | .536 | -.001 | SAT I Math | 1,754 | 655 | 82.95 |
| SAT II English | | | | .520 | .458 | .207 | SAT II English | 1,754 | 613 | 96.18 |
| SAT II Math | | | | | .563 | .069 | SAT II Math | 1,754 | 646 | 93.11 |
| SAT II - Test 3 | | | | | | .118 | SAT II - Test 3 | 1,754 | 635 | 104.76 |
| | | | | | | | 1st Year GPA | 1,754 | 3.09 | 0.48622 |
| **Second Quintile** | | | | | | | | | | |
| HS GPA | .367 | .426 | .402 | .441 | .319 | .327 | HS GPA | 687 | 3.75 | 0.43977 |
| SAT I Verbal | | .541 | .772 | .496 | .517 | .200 | SAT I Verbal | 687 | 578 | 92.56 |
| SAT I Math | | | .516 | .844 | .487 | .144 | SAT I Math | 687 | 613 | 88.67 |
| SAT II English | | | | .507 | .497 | .245 | SAT II English | 687 | 578 | 95.00 |
| SAT II Math | | | | | .511 | .180 | SAT II Math | 687 | 600 | 94.09 |
| SAT II - Test 3 | | | | | | .123 | SAT II - Test 3 | 687 | 596 | 108.71 |
| | | | | | | | 1st Year GPA | 687 | 2.95 | 0.54205 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Third Quintile** | | | | | | | | | | |
| HS GPA | .377 | .434 | .416 | .436 | .294 | .373 | HS GPA | 467 | 3.72 | 0.44394 |
| SAT I Verbal | | .580 | .787 | .540 | .451 | .219 | SAT I Verbal | 467 | 556 | 96.92 |
| SAT I Math | | | .549 | .868 | .440 | .186 | SAT I Math | 467 | 596 | 93.06 |
| SAT II English | | | | .533 | .450 | .261 | SAT II English | 467 | 557 | 97.70 |
| SAT II Math | | | | | .457 | .168 | SAT II Math | 467 | 585 | 97.30 |
| SAT II - Test 3 | | | | | | .158 | SAT II - Test 3 | 467 | 587 | 108.45 |
| | | | | | | | 1st Year GPA | 467 | 2.96 | 0.53498 |

| | SAT I Verbal | SAT I Math | SAT II English | SAT II Math | SAT II Test 3 | 1st Year GPA | | N | Mean | Standard Deviation |
|---|---|---|---|---|---|---|---|---|---|---|
| **Fourth Quintile** | | | | | | | | | | |
| HS GPA | .362 | .452 | .386 | .445 | .250 | .390 | HS GPA | 278 | 3.70 | 0.44736 |
| SAT I Verbal | | .577 | .774 | .525 | .380 | .218 | SAT I Verbal | 278 | 530 | 96.41 |
| SAT I Math | | | .549 | .866 | .314 | .137 | SAT I Math | 278 | 567 | 94.75 |
| SAT II English | | | | .526 | .359 | .256 | SAT II English | 278 | 532 | 95.00 |
| SAT II Math | | | | | .330 | .115 | SAT II Math | 278 | 556 | 94.72 |
| SAT II - Test 3 | | | | | | .052 | SAT II - Test 3 | 278 | 573 | 118.58 |
| | | | | | | | 1st Year GPA | 278 | 2.83 | 0.56483 |
| **Fifth Quintile** | | | | | | | | | | |
| HS GPA | .353 | .454 | .381 | .473 | .182 | .212 | HS GPA | 199 | 3.60 | 0.47331 |
| SAT I Verbal | | .611 | .783 | .541 | .265 | .158 | SAT I Verbal | 199 | 497 | 96.65 |
| SAT I Math | | | .586 | .866 | .224 | .228 | SAT I Math | 199 | 536 | 95.66 |
| SAT II English | | | | .551 | .258 | .186 | SAT II English | 199 | 504 | 89.14 |
| SAT II Math | | | | | .237 | .272 | SAT II Math | 199 | 531 | 92.70 |
| SAT II - Test 3 | | | | | | .118 | SAT II - Test 3 | 199 | 578 | 125.51 |
| | | | | | | | 1st Year GPA | 199 | 2.77 | 0.55710 |

**All California public high schools are ranked into five categories (quintiles) based on the average performance value (APV) of each school. The APV is calculated based on a combination of the following school level factors sourced from the California Basic Education Data System*

- *Percentage of students enrolled in A-F courses.*
- *Percentage of students staying in school (drop-out compliment).*
- *Percentage of students attending UC or CSU.*
- *Percentage of students taking SAT.*
- *Percentage of students in Advanced Placement (AP) courses.*

Table 5

Correlations of SAT I, SAT II and GPA
Income*
Fall 2001

| | *Correlations* | | | | | | | *Descriptive* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SAT I Verbal | SAT I Math | SAT II English | SAT II Math | SAT II Test 3 | 1st Year GPA | | N | Mean | Standard Deviation |
| **High Income** | | | | | | | | | | |
| HS GPA | .374 | .380 | .402 | .399 | .372 | .314 | HS GPA | 1,122 | 3.74 | 0.43041 |
| SAT I Verbal | | .485 | .741 | .480 | .583 | .180 | SAT I Verbal | 1,122 | 610 | 84.21 |
| SAT I Math | | | .499 | .842 | .549 | .065 | SAT I Math | 1,122 | 646 | 80.82 |
| SAT II English | | | | .514 | .548 | .190 | SAT II English | 1,122 | 614 | 91.34 |
| SAT II Math | | | | | .583 | .087 | SAT II Math | 1,122 | 633 | 91.63 |
| SAT II - Test 3 | | | | | | .164 | SAT II - Test 3 | 1,122 | 618 | 99.52 |
| | | | | | | | 1st Year GPA | 1,122 | 3.10 | 0.50849 |
| **Medium High Inc.** | | | | | | | | | | |
| HS GPA | .375 | .394 | .408 | .408 | .315 | .256 | HS GPA | 596 | 3.73 | 0.42604 |
| SAT I Verbal | | .510 | .751 | .490 | .572 | .166 | SAT I Verbal | 596 | 592 | 87.79 |
| SAT I Math | | | .507 | .857 | .533 | .074 | SAT I Math | 596 | 626 | 86.91 |
| SAT II English | | | | .518 | .521 | .204 | SAT II English | 596 | 595 | 94.82 |
| SAT II Math | | | | | .555 | .107 | SAT II Math | 596 | 613 | 95.32 |
| SAT II - Test 3 | | | | | | .149 | SAT II - Test 3 | 596 | 605 | 104.06 |
| | | | | | | | 1st Year GPA | 596 | 3.04 | 0.50030 |
| **Medium Low Inc.** | | | | | | | | | | |
| HS GPA | .367 | .386 | .383 | .402 | .272 | .283 | HS GPA | 855 | 3.69 | 0.44243 |
| SAT I Verbal | | .540 | .780 | .503 | .406 | .170 | SAT I Verbal | 855 | 568 | 94.97 |
| SAT I Math | | | .536 | .871 | .477 | .155 | SAT I Math | 855 | 609 | 95.38 |
| SAT II English | | | | .522 | .412 | .217 | SAT II English | 855 | 570 | 97.44 |
| SAT II Math | | | | | .494 | .173 | SAT II Math | 855 | 599 | 100.34 |
| SAT II - Test 3 | | | | | | .181 | SAT II - Test 3 | 855 | 608 | 113.39 |
| | | | | | | | 1st Year GPA | 855 | 2.93 | 0.52974 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Low Income** | | | | | | | | | | |
| HS GPA | .333 | .426 | .369 | .425 | .234 | .274 | HS GPA | 663 | 3.64 | 0.45614 |
| SAT I Verbal | | .579 | .797 | .526 | .342 | .196 | SAT I Verbal | 663 | 526 | 103.25 |
| SAT I Math | | | .558 | .887 | .400 | .189 | SAT I Math | 663 | 580 | 105.67 |
| SAT II English | | | | .543 | .348 | .244 | SAT II English | 663 | 534 | 99.95 |
| SAT II Math | | | | | .408 | .225 | SAT II Math | 663 | 574 | 106.54 |
| SAT II - Test 3 | | | | | | .089 | SAT II - Test 3 | 663 | 604 | 127.90 |
| | | | | | | | 1st Year GPA | 663 | 2.89 | 0.56564 |

**2001 Income Categories: Low = Income ≤ $32,800; Medium Low = $32,801-$65,600; Medium High = $65,601-$98,400; High = Income ≥ $98,401.*

Table 6

Correlations of SAT I, SAT II and GPA
First Language Learned
Fall 2001

| | *Correlations* | | | | | | | *Descriptive* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SAT I Verbal | SAT I Math | SAT II English | SAT II Math | SAT II Test 3 | 1st Year GPA | | N | Mean | Standard Deviation |
| **English Only** | | | | | | | | | | |
| HS GPA | .390 | .426 | .403 | .432 | .409 | .304 | HS GPA | 2,213 | 3.74 | 0.42943 |
| SAT I Verbal | | .580 | .757 | .560 | .737 | .249 | SAT I Verbal | 2,213 | 606 | 85.99 |
| SAT I Math | | | .558 | .850 | .586 | .159 | SAT I Math | 2,213 | 626 | 84.82 |
| SAT II English | | | | .560 | .668 | .279 | SAT II English | 2,213 | 608 | 93.09 |
| SAT II Math | | | | | .610 | .178 | SAT II Math | 2,213 | 613 | 93.06 |
| SAT II - Test 3 | | | | | | .278 | SAT II - Test 3 | 2,213 | 599 | 98.74 |
| | | | | | | | 1st Year GPA | 2,213 | 3.08 | 0.50165 |
| **English & Another** | | | | | | | | | | |
| HS GPA | .390 | .400 | .422 | .418 | .313 | .269 | HS GPA | 1,024 | 3.66 | 0.45677 |
| SAT I Verbal | | .659 | .799 | .633 | .500 | .138 | SAT I Verbal | 1,024 | 576 | 99.41 |
| SAT I Math | | | .648 | .886 | .456 | .182 | SAT I Math | 1,024 | 624 | 101.52 |
| SAT II English | | | | .650 | .493 | .171 | SAT II English | 1,024 | 580 | 103.71 |
| SAT II Math | | | | | .483 | .228 | SAT II Math | 1,024 | 615 | 106.15 |
| SAT II - Test 3 | | | | | | .149 | SAT II - Test 3 | 1,024 | 622 | 112.39 |
| | | | | | | | 1st Year GPA | 1,024 | 2.96 | 0.54033 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Another Language** | | | | | | | | | | |
| HS GPA | .324 | .361 | .376 | .385 | .176 | .254 | HS GPA | 776 | 3.72 | 0.42747 |
| SAT I Verbal | | .524 | .812 | .502 | .267 | .191 | SAT I Verbal | 776 | 538 | 108.33 |
| SAT I Math | | | .532 | .892 | .398 | .174 | SAT I Math | 776 | 628 | 106.54 |
| SAT II English | | | | .540 | .268 | .270 | SAT II English | 776 | 552 | 107.28 |
| SAT II Math | | | | | .396 | .240 | SAT II Math | 776 | 623 | 109.62 |
| SAT II - Test 3 | | | | | | .114 | SAT II - Test 3 | 776 | 659 | 122.79 |
| | | | | | | | 1st Year GPA | 776 | 2.93 | 0.55175 |

Table 7

Correlations of SAT I, SAT II and GPA
First Generation College Status and Low Income
Fall 2001

| | *Correlations* | | | | | | | *Descriptive* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SAT I Verbal | SAT I Math | SAT II English | SAT II Math | SAT II Test 3 | 1st Year GPA | | N | Mean | Standard Deviation |
| **First Gen&Low Inc** | | | | | | | | | | |
| HS GPA | .323 | .426 | .367 | .433 | .215 | .267 | HS GPA | 298 | 3.61 | 0.45316 |
| SAT I Verbal | | .582 | .778 | .525 | .312 | .189 | SAT I Verbal | 298 | 503 | 99.00 |
| SAT I Math | | | .550 | .877 | .287 | .242 | SAT I Math | 298 | 556 | 102.37 |
| SAT II English | | | | .530 | .315 | .259 | SAT II English | 298 | 511 | 92.15 |
| SAT II Math | | | | | .295 | .296 | SAT II Math | 298 | 551 | 102.63 |
| SAT II - Test 3 | | | | | | .092 | SAT II - Test 3 | 298 | 596 | 130.70 |
| | | | | | | | 1st Year GPA | 298 | 2.82 | 0.60220 |
| **Not 1st Gen/Low Inc** | | | | | | | | | | |
| HS GPA | .374 | .398 | .405 | .411 | .334 | .297 | HS GPA | 3,730 | 3.72 | 0.43558 |
| SAT I Verbal | | .538 | .777 | .514 | .510 | .211 | SAT I Verbal | 3,730 | 595 | 92.83 |
| SAT I Math | | | .540 | .862 | .527 | .132 | SAT I Math | 3,730 | 632 | 89.66 |
| SAT II English | | | | .542 | .493 | .248 | SAT II English | 3,730 | 598 | 98.18 |
| SAT II Math | | | | | .554 | .169 | SAT II Math | 3,730 | 621 | 97.27 |
| SAT II - Test 3 | | | | | | .178 | SAT II - Test 3 | 3,730 | 616 | 106.57 |
| | | | | | | | 1st Year GPA | 3,730 | 3.03 | 0.51613 |

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