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CollegeBoard

The Validity of the SAT® for Predicting Cumulative Grade Point Average by College Major

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VALIDITY

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Executive Summary

The current study examined the differential validity of the SAT® for predicting cumulative GPA (cGPA) through the second year of college by college major, as well as the differential prediction of cGPA by college major across student subgroups. The relationship between the SAT and cGPA varied somewhat by major, as well as by major and subgroup (e.g. gender, ethnicity, and parental education level). This variability was likely due to differences in the nature of the college course work, grading practices, student self-selection, and academic cultures (e.g., male dominated or highly competitive) across majors. The findings from this study may be particularly relevant to colleges and universities in examining different admission criteria for acceptance to specialized colleges and major programs within an institution, and thus it could serve as a comprehensive resource for higher education researchers examining college major and performance.

Introduction

When the SAT was introduced in March 2005 with a writing section and revised critical reading and mathematics sections, a comprehensive validity research plan was developed in order to critically examine the use of the SAT for intended purposes such as admission, placement, or retention (Kobrin, Patterson, Shaw, Mattern, & Barbuti, 2008; Mattern & Patterson, 2009; Mattern, Patterson, Shaw, Kobrin, & Barbuti, 2008). It was also important to examine the validity of the SAT for predicting performance by various student subgroups, such as gender, race/ethnicity, and best spoken language, and also by the type of four-year institutions attended, including public versus private, institution size, and selectivity. Because validity research is an ongoing process whereby evidence accumulates over time (Kane, 2009; Messick, 1989) and because the first cohort of students to take the revised SAT (the entering college class of fall 2006) is progressing through college, it is useful to examine the validity of the SAT for predicting cumulative grade point average (cGPA) by college major.

There are likely to be informative differences in the predictive validity of the SAT for cGPA by academic program. Findings from such research can guide institutions in understanding SAT performance differences in light of students' intended college major. For example, there may be students in majors for which the SAT is more predictive of cGPA than other majors, or students in majors wherein a particular SAT section may be highly predictive of college performance, while another SAT section may not be as strongly related.

Literature Review

As Pascarella and Terenzini (2005) point out in their comprehensive work, *How College Affects Students*, different academic major fields attract different kinds of students, and these initial differences become accentuated over time in each discipline. Students choose an academic major for a variety of reasons, including their interests (Allen & Robbins, 2008; Larson, Wei, Wu, Borgen, & Bailey, 2007; Leuwerke, Robbins, Sawyer, & Hovland, 2004; Porter & Umbach, 2006; Wessel, Ryan, & Oswald, 2008), prior academic performance (Allen & Robbins, 2008; Leuwerke et al., 2004; Trusty, 2002; Turner & Bowen, 1999; Wessel et al., 2008), self-efficacy in particular domains (Larson et al., 2007; Lent, Sheu, Singley, Schmidt, Schmidt, & Gloster, 2008; Nauta & Epperson, 2003; Scott & Mallinckrodt, 2005), and other contextual factors related to their background and/or expectations of future earning potential.

Gender

There tend to be gender differences in enrollment by major, with male students overrepresented in majors linked to high-paying occupations while the opposite is true for female students (Pascarella & Terenzini, 2005). Similarly, male and female students are not equally distributed among majors that differ in the leniency of grading standards, leading to gender differences in the prediction of college performance (Grandy, 1987a, 1987b; Pennock-Román, 1994). Recent research by Ceci, Williams, and Barnett (2009) noted that female and male students tend to take the same number of advanced mathematics and science courses through high school and that female students often receive higher grades. Nevertheless, due to personal decisions or social pressures, female students at the beginning of high school tend to opt out of pursuing more mathematically rigorous careers and instead choose more people-oriented careers in medicine or biology. The researchers remarked that women with high mathematics ability also often have high verbal abilities, and this enables them to have more career options than men, who tend to have high mathematics abilities but relatively lower verbal abilities.

Race/Ethnicity

There also appear to be racial/ethnic differences influencing the choice of college major that would likely affect our understanding of students in particular majors by race/ethnicity (e.g. Dickson, 2010; Simpson, 2001). Dickson (2010), in a study of three public universities in Texas, found that Asian male students tended to be overrepresented in science and engineering degrees, and that white male students were also overrepresented in engineering and computer science degrees. However, white female students were underrepresented in the pursuit of these degrees in comparison to their proportion of the population of students. While Asian female and black male students appeared to be evenly distributed across the major fields, Dickson found that black female students were overrepresented in the natural and physical sciences and social sciences, and underrepresented in business, engineering, and computer science degrees. Additionally, Hispanic male students were overrepresented in engineering and computer science degrees but underrepresented in humanities and other majors, while the opposite was true for Hispanic female students.

Simpson (2001) identified factors influencing academic major choice for students and examined whether these factors varied by racial/ethnic group. Simpson used a multinomial logistic model on a national longitudinal sample of approximately 2,300 high school students, who were followed to completion of a bachelor's degree; the goal was to identify racial/ethnic differences in the choice of majoring in business, health and life sciences, liberal arts, public service, and technical programs in college. Independent variables included family socioeconomic status (SES), students' academic preparation, cultural capital based on high school activities, group or cultural values (related to personal control or fatalism), social capital and the effect of significant others (family ties), and institutional factors (e.g. acceptance rate, campus diversity, money spent on teaching and research per student). The model also controlled for gender, female-headed households, private control and SES of the students' high schools, importance of money, and the academic goals of the students' peers.

Simpson (2001) found that the number of English courses taken in high school, maternal involvement, and cultural capital differentially influenced major choice by race/ethnicity. Specifically, African American, Hispanic, and Native American students taking more high school English courses were more likely to major in health-related programs as opposed to technical programs, while Asian American students taking more English courses in high school were more likely to major in a technical program over a liberal arts program. Also, greater maternal attention to students' high school course work increased the likelihood of Asian American students' majoring in public service programs over technical degree programs. Cultural capital differentially affected white students compared to African American, Hispanic, and Native American students: White students with more cultural capital were more likely to major in health than technical degree programs, while the level of cultural capital did not influence the major choice of African American, Hispanic, and Native American students.

Socioeconomic Status

Socioeconomic status — as represented by a number of different factors, including the highest parental education level, parental income, and other social and/or demographic information — is typically related to academic performance and other educational outcomes (Kobrin, Sathy, & Shaw, 2006). Choice of student major is also related to students' socioeconomic status (Ayala & Striplen, 2002; Orndorff & Herr, 1996; Pearson & Dellman-Jenkins, 1997). Ayala and Striplen (2002) found that first-generation college students tended to have more limited career awareness and to be less sure of their academic focus or major in college. However, Pearson and Dellman-Jenkins (1997) did not find that parental

education level was a significant influence on whether incoming college students at a midwestern university had decided on an academic major, although they did find that parental encouragement and family structure variables (such as the residential status of the father) influenced the decision as to college major.

Major Characteristics

Irrespective of the students enrolled in a particular major, academic disciplines tend to have characteristics of their own that may intensify existing student differences. Goldman and Hudson (1973) found that different major fields of study required students to utilize different academic strategies (e.g., mnemonics, transformation, formal reasoning), and that the different strategies used were irrespective of ability differences among students found across the different majors. Similarly, Tempelaar, Gijselaers, Schim van der Loeff, and Nijhuis (2007) examined students' achievement motivations across five academic subject areas (statistics, business strategy, finance and accounting, marketing management, and organization and human resource management). Achievement motivations were characterized as a combination of students' positive and negative feelings about a subject, their attitudes about their cognitive competence in a subject, their value about the usefulness and relevance of a subject, and the perceived difficulty of a subject. The researchers found that while there was a sizeable generic component in achievement motivations across the five subject areas, in most cases subject-specific achievement motivations played a larger role, indicating that a student's achievement motivation should not be considered irrespective of an academic domain. In addition, they found differences in motivational structure by "hard" and "soft" subjects, or the degree to which the academic domain was based on the existence of a clearly delineated paradigm (Biglan, 1973). For example, "hard" subjects such as mathematics — which has a paradigm specifying the appropriate problems to study and the appropriate methods to solve them — tended to have lower scores on affective aspects of achievement motivation and perceived lack of difficulty.

Predictive Validity

In previous research on the validity of the SAT, Morgan (1990) conducted analyses by intended major, among other categorizations of students. Morgan examined four groups of majors: business, liberal arts, preprofessional, and technical. He found that there were differences in the predictive validity of the SAT by major; for instance, SAT mathematics section regression weights were higher than those of SAT verbal[1] weights in the prediction of first-year GPA for technical majors, while the opposite was true for students in liberal arts majors.

More recently, Cliffordson (2008) examined the differential validity and prediction of high school grades along with Swedish Scholastic Aptitude Test (SweSAT) scores when predicting college performance for higher education selection in Sweden across different academic programs. The SweSAT consists of six subtests that measure vocabulary; data sufficiency; reading comprehension; diagrams, tables, and maps; English reading comprehension; and general information. The predictive power of the academic measures was evaluated by three major academic areas: humanities and social sciences; technology and natural sciences; and remaining sciences, which included programs such as medicine and education.

Results of the study indicated that there was differential predictive validity of the SweSAT by academic area, with the SweSAT more accurately predicting higher education performance for

1. Prior to March 2005, the SAT critical reading section was called the SAT verbal section. The verbal section of the test was renamed to reflect changes in emphasis and format, including the removal of analogies and the addition of questions on both short and long reading passages from a variety of fields, such as science and the humanities.

students in humanities and social sciences programs as opposed to students in technology and natural sciences programs. Cliffordson (2008) suspected that this difference was due to the greater verbal emphasis on the SweSAT, and a corresponding emphasis in domains such as the humanities and social sciences. This study also found that there was greater differential predictive validity of the SweSAT by program than by students' grades in high school.

Pennock-Román (1994) examined the role of college major on the prediction of freshman GPA by gender, as well as by gender and race/ethnicity. She found that while female students' college grades were typically underpredicted (i.e., they performed better in college than their precollege variables would have predicted), controlling for grading leniency by major did reduce the differential prediction of GPA by gender, although it did not completely eradicate the differential prediction. While Pennock-Román noted that it is more accurate to adjust for grading standards using course grades in the prediction of freshman GPA, it is much less labor intensive, albeit slightly less precise, to control for grading standards using the student's general field of study. This study, similar to others, found that engineering students, for example, experienced more stringent grading standards. However, Pennock-Román suggested that categorizing majors by the two broad categories of quantitative versus nonquantitative, with the addition of biological sciences as its own category (due to the variation and inconsistencies in grading in this major), could be useful in grouping students in future analyses. In support of this classification of majors, research has found that courses in the humanities, social sciences, education, and business tend to be more leniently graded than courses in the physical sciences or engineering (Elliott & Strenta, 1988; Pennock-Román, 1990).

The current study will examine differences in the validity of the SAT in the prediction of cGPA by college major, and it will provide information on subgroup differences related to college major and performance. This study will make a unique contribution to the literature in this field, given that it is the first comprehensive examination of the predictive validity of the revised SAT (which includes the writing section) by college major. The SAT is taken by more than 1.6 million college-bound seniors across the U.S. and abroad (College Board, 2011); therefore, the results should be of interest to the many students who have taken or will take the SAT and to those colleges and universities admitting students, in part, based on their SAT scores. Another contribution of this study is that it will examine the predictive validity of the SAT within more specific or specialized college major fields than most related previous research studies, which typically have examined the predictive validity within broader academic domains. Additionally, this study will analyze results by highest parental education level within each major, making it, to our knowledge, one of the first studies to undertake this type of examination. Because the study focuses on results by college major or college major

This study will make a unique contribution to the literature in this field, given that it is the first comprehensive examination of the predictive validity of the revised SAT (which includes the writing section) by college major.

by subgroup, the reporting of findings will not focus on the overall gender, race/ethnicity, or parental education level results. This information can be found in Mattern et al. (2008).

Method

Sample

The sample was taken from 66 four-year colleges and universities that submitted second-year performance data for the entering class of fall 2006 to the College Board for research on test validity and college success. These 66 institutions were among the 110 institutions participating in the national SAT Validity Study (see Kobrin et al., 2008, for a full description of the study). Thirty-nine of these institutions also submitted information on students' majors at the beginning of their third year of college. The data from these colleges and universities were merged with College Board data, including SAT scores and student responses to the SAT Questionnaire (SAT-Q). Students complete the SAT-Q when they register to take the SAT. In order for students at these 39 institutions to be included in the sample for this study, they had to have (a) taken the SAT; (b) indicated their high school GPA (HSGPA) on the SAT-Q; (c) a valid first-year college GPA; (d) a valid two-year cumulative college GPA; and (e) a valid major provided by the college or university. Ultimately, there were 39,440 students included in this study.

Table 1 shows the characteristics of the institutions included in this study. The institutions represent all regions of the United States. More than half of the institutions are private institutions, and about half are moderately selective, admitting between 50% and 75% of applicants. The institutions are very diverse in terms of total enrollment of degree-seeking undergraduates (size), and in the percentage of bachelor's degrees awarded in a science, technology, engineering, or mathematics (STEM) field.

Data

College Majors. The students' majors at the beginning of the third year of college were reported by the institutions in the sample and were based on Classification of Instructional Program (CIP) codes or combinations of CIP codes. These CIP codes were first developed by the U.S. Department of Education's National Center for Education Statistics (NCES) in 1980, with revisions occurring every few years (see http://nces.ed.gov/ipeds/cipcode for more information). Table 2 lists the major categories and CIP descriptions used in this study and specifies how the CIP codes were combined into major categories for the purposes of this study. Students who did not have an academic major at the time of the study based on information from their colleges or universities attended were considered to have *undeclared* majors.

College/University Data. Data on each participating institution's size, selectivity, control, and focus on STEM were derived from the College Board's *Annual Survey of Colleges*, which collects information from colleges, universities, vocational/technical, and graduate schools that is of interest to potential applicants.

Cumulative Second-Year GPA (cGPA). Each participating institution provided cumulative second-year GPA for their 2006 first-time, first-year students. The range of cGPA across institutions was 0.00 to 4.17, with a mean of 3.10 and a standard deviation of 0.59.

Demographic Information. Demographic information, including gender, race/ethnicity, and highest parental education level, was self-reported by the students and obtained from the SAT-Q.

HSGPA. HSGPA was self-reported and obtained from the SAT-Q. Students' HSGPAs were on a 12-point scale ranging from a maximum of A+ (4.33) to a minimum of F (0.00), with a mean of 3.65 and a standard deviation of 0.50.

Retention to the Third Year. Each participating institution supplied third-year retention data for their 2006 first-time, first-year students. Students were assigned a value of 1 if they returned for their third year and a value of 0 if they did not return. The mean retention rate was 0.91 with a standard deviation of 0.29.

SAT Scores. Official SAT scores obtained from the 2006 College-Bound Seniors cohort database were used in the analyses. This database is composed of students who participated in the SAT program and reported plans to graduate from high school in 2006. The SAT is composed of three sections: critical reading, mathematics, and writing. The score scale for each section is 200–800.

Data Analyses

Descriptive statistics of the academic measures by each major, as well as by major and gender, race/ethnicity, and highest reported parental education level, were computed. These results were reported when there were at least three institutions and at least 15 students with that major. The differential validity of the SAT and other academic measures by major was examined by computing correlations and multiple correlations between the academic measures and cumulative GPA through the second year of college (cGPA) by major field. These correlations were also computed by gender, race/ethnicity, and highest reported parental education level within the major field. The correlation coefficients were computed at the institutional level (by major, or by major and subgroup), then pooled across institutions and weighted by sample size. In addition, these correlations were corrected for restriction of range because the range of SAT scores and HSGPAs of enrolled students is restricted compared to that of all SAT takers. This results in an underestimation of the true relationship of the SAT and HSGPA with the criterion of cGPA. The Pearson–Lawley multivariate correction was applied to correct for restriction of range, using the 2006 College Bound Seniors cohort as the population (Gulliksen, 1950). These results were reported when there were at least three institutions with at least 15 students with that major by institution. See appendixes A through D for the uncorrected correlation coefficients.

To assess the extent to which the SAT, as well as HSGPA, exhibited differential prediction, regression equations within each institution were estimated. Next, the average residual was computed across the entire sample, separately for each major and for major by subgroup. The expected value of the residual for the total group always equaled zero; however, if the average residual value by subgroup was significantly different than zero, then the measure was said to exhibit differential prediction. Specifically, if the average residual value was positive for a specific subgroup, then the measure tended to underpredict academic success for that group. In other words, students from this group tended to perform better than had been predicted by the regression equation. Conversely, if the average residual value was negative, then the measure tended to overpredict academic success for that group, or the students tended to perform worse than what had been predicted by the regression equation. In the results section, the raw mean residuals for each major by gender, race/ethnicity, and parental

education level are presented. These results were reported when there were at least three institutions and at least 15 students across the sample within that major.

Results

Descriptive Statistics

Table 3 includes the number of institutions, students, percentage of sample, and means and standard deviations for SAT critical reading (SAT-CR), mathematics (SAT-M), and writing (SAT-W) scores, as well as HSGPA, cGPA, and retention to the third year, by academic major. In this sample of institutions, the three major fields observed across the greatest number of institutions were biological and biomedical sciences, humanities and liberal arts, and social sciences (k = 39). The least commonly observed major field across institutions was security and protective services (k = 18). The major field with the largest percentage of students was business, management, and marketing (16% of the sample), while the majors with the smallest percentage of students were agriculture/natural resources, and social services and public administration (each accounting for 1% of the sample).

With regard to students' precollege academic performance, the major field with the highest mean SAT-CR score was foreign languages, literatures, and linguistics (M = 606; SD = 96.4), which was also the major field with the highest mean SAT-W score (M = 601; SD = 97.5). The major field with the highest mean SAT-M score was engineering/architecture (M = 657, SD = 76.1). Conversely, security and protective services had the lowest mean SAT-CR score (M = 501; SD = 80.1), SAT-M score (M = 515; SD = 83.8), SAT-W score (M = 494; SD = 81.9), and HSGPA (M = 3.29; SD = 0.50). The two major fields with the highest mean HSGPAs were biological and biomedical sciences (M = 3.80; SD = 0.45) and engineering/architecture (M = 3.80; SD = 0.43).

Additionally, the average college performance by major field was computed. Students in foreign languages, literatures, and linguistics had the highest mean cGPA (M = 3.30; SD = 0.54), while undeclared students had the lowest mean cGPA (M = 2.72; SD = 0.65). Engineering/architecture had the highest rate of retention to the third year of college (M = 0.95; SD = 0.22), while the lowest rate of retention, by far, was for undeclared students (M = 0.70; SD = 0.46). Students in the undeclared group, compared to all other major fields, displayed the greatest variation in each academic measure.

Table 4 displays the descriptive statistics within the major by gender. There were clear differences in the distribution of male and female students within the various majors. The major field with the largest percentage of female students was social sciences (16% of the female student sample compared to 12% of the male student sample), whereas the major field with the largest percentage of male students was engineering/architecture (23% of the male student sample compared to 6% of the female student sample). The major field with the smallest percentage of female students was computer and information science (less than 1% of the female student sample compared to 4% of the male student sample), while the major with the smallest percentage of male students was social services and public administration (less than 1% of the male student sample compared to 1% of the female student sample).

Female as well as male students in engineering/architecture had the highest mean SAT-M scores (M = 650 and SD = 75.0; M = 659 and SD = 76.2, respectively) and HSGPAs (M = 3.90 and SD = 0.38; M = 3.77 and SD = 0.44, respectively). Similarly, these students had among the highest retention rates to the third year (M = 0.96 and SD = 0.19; M = 0.95 and SD = 0.22,

respectively). Also, female as well as male students in foreign languages, literatures, and linguistics had the highest mean SAT-CR (*M* = 609 and *SD* = 95.1; *M* = 599 and *SD* = 99.8, respectively) and SAT-W (*M* = 606 and *SD* = 93.5; *M* = 588 and *SD* = 106.8, respectively) scores, as well as the highest cGPAs (*M* = 3.35 and *SD* = 0.51; *M* = 3.16 and *SD* = 0.59, respectively). The undeclared female and male students had the lowest cGPAs (*M* = 2.81 and *SD* = 0.65; *M* = 2.64 and *SD* = 0.64, respectively) and retention rates to the third year (M = 0.67 and *SD* = 0.47; *M* = 0.72 and *SD* = 0.45, respectively), although the undeclared female students had a higher mean cGPA than male students in this group and had a lower mean retention rate than their male counterparts.

Table 5 includes descriptive statistics within the major by race/ethnicity. Due to small sample sizes among three racial/ethnic groups by major (American Indian or Alaska Native, Other, and Not Reported), four racial/ethnic subgroups were analyzed: Asian, Asian American, or Pacific Islander; black or African American; Hispanic, Latino, or Latin American; and white students.[2] Appendix E includes the frequencies of the unanalyzed racial/ethnic groups by major for reference. There are differences in the distribution of racial/ethnic groups by major. Notably, the major field with the largest percentage of Asian students was engineering/architecture, comprising 21% of the Asian student sample compared to 12% of black students, 10% of Hispanic students, and 14% of white students. After engineering/architecture, Asian students were most likely to major in biological and biomedical sciences (17%) and business, management, and marketing (16%), while black students were most likely to major in business, management, and marketing (17%) and social sciences (17%). Hispanic students were most likely to major in social sciences (19%) followed by business, management, and marketing (14%) and humanities and liberal arts (14%). White students were somewhat more evenly distributed among majors and were most likely to major in business, management, and marketing (16%), followed by engineering/architecture (14%), humanities and liberal arts (14%), and social sciences (13%).

For Asian, black, and Hispanic students, those majoring in engineering/architecture had the highest mean SAT-CR (*M* = 593 and *SD* = 94.7; *M* = 546 and *SD* = 76.7; *M* = 565 and *SD* = 82.0, respectively), SAT-M (*M* = 688 and *SD* = 71.6; *M* = 594 and *SD* = 77.2; *M* = 625 and *SD* = 82.6, respectively), and SAT-W (*M* = 591 and *SD* = 92.0; *M* = 538 and *SD* = 85.3; *M* = 556 and *SD* = 81.9, respectively) scores among all major fields. For white students, those majoring in engineering/architecture had the highest mean SAT-M scores (*M* = 657; *SD* = 72.6), but those majoring in foreign languages, literatures, and linguistics had the highest mean SAT-CR (*M* = 623; *SD* = 91.0) and SAT-W (*M* = 615; *SD* = 93.6) scores. For Asian, black, and white students, biological and biomedical sciences majors and engineering/architecture majors had the highest mean HSGPAs, while undeclared students had the lowest mean HSGPAs. Hispanic students majoring in engineering/architecture (*M* = 3.85; *SD* = 0.39) and mathematics and statistics/physical sciences (*M* = 3.83; *SD* = 0.42) had the highest mean HSGPAs, while the lowest mean HSGPAs were in security and protective services (*M* = 3.47; *SD* = 0.38) and the social services and public administration major (*M* = 3.46; *SD* = 0.43); however, the latter majors represent very small samples (*k* = 7 and *n* = 18, respectively). Within majors, precollegiate academic measures tended to be highest for Asian students, followed by white, Hispanic, and then black students.

With the exception of undeclared students, there was noticeable variation with regard to college outcomes by race/ethnicity across major fields. For example, Asian students in biological and biomedical sciences (*M* = 3.27; *SD* = 0.55); business, management, and marketing (*M* = 3.25; *SD* = 0.58); health professions (*M* = 3.24; *SD* = 0.55); and humanities

2. These groups will be referred to throughout the study as Asian, black, Hispanic, and white students.

and liberal arts (*M* = 3.24; *SD* = 0.48) tended to have the highest mean cGPAs, while among black students, those in agriculture/natural resources (*M* = 2.87; *SD* = 0.52), social sciences (*M* = 2.86; *SD* = 0.59), and communications/journalism (*M* = 2.85; *SD* = 0.55) tended to have the highest mean cGPAs. Hispanic students majoring in communications/journalism (*M* = 3.08; *SD* = 0.51) tended to have the highest mean cGPAs, as well as those majoring in engineering/architecture (*M* = 3.06; *SD* = 0.51). White students majoring in foreign languages, literatures, and linguistics (*M* = 3.36; *SD* = 0.53) tended to have the highest mean cGPA among all majors.

Additionally, retention rates varied across majors as a function of a student's race/ethnicity. Among Asian students, those majoring in foreign languages, literatures, and linguistics (*M* = 1.00; *SD* = 0.00), communications/journalism (*M* = 0.97; *SD* = 0.18), and engineering/architecture (*M* = 0.97; *SD* = 0.18) had the highest mean retention rates. As for black students, communications/journalism (*M* = 0.96; *SD* = 0.20) and engineering/architecture majors (*M* = 0.96; *SD* = 0.20) had the highest mean retention rates. Among Hispanic students, engineering/architecture (*M* = 0.94; *SD* = 0.23), social sciences (*M* = 0.94; *SD* = 0.24), foreign languages, literatures, and linguistics (*M* = 0.93; *SD* = 0.25), and communications/journalism (*M* = 0.93; *SD* = 0.25) majors had the highest mean retention rates. Among white students, those majoring in engineering/architecture (*M* = 0.95; *SD* = 0.22) and agriculture/natural resources (*M* = 0.95; *SD* = 0.23) had the highest mean retention rates.

Table 6 displays descriptive statistics within the major by students' highest reported parental education level. There were three parental education levels analyzed and placed into subgroups: Less Than a Bachelor's Degree, Bachelor's Degree, and More Than a Bachelor's Degree. Due to small sample sizes by major for students who did not report their highest parental education level, these students were not analyzed. Appendix E includes the frequencies of this unanalyzed group (i.e., nonresponse to highest parental education level) by major for reference. Though enrollment in the different majors by parental education subgroup was similar, there were larger differences for engineering/architecture majors, with more students in the Bachelor's Degree (15%) and More Than a Bachelor's Degree (16%) groups enrolled in that major field than students in the Less Than a Bachelor's Degree group (10%). Patterns of performance by major field among the three parental education level groups were quite similar, though there were mean level differences across the three groups, with the More Than a Bachelor's Degree group generally exhibiting the strongest academic performance across majors, followed by the Bachelor's Degree group and then the Less Than a Bachelor's Degree group.

The majors with the highest mean performance on the SAT across the three parental education groups tended to be engineering/architecture and foreign languages, literatures, and linguistics, while the highest HSGPAs were found in those major fields as well as in biological and biomedical sciences and mathematics and statistics/physical sciences. Across all parental education subgroups, the highest cGPA was in the foreign languages, literatures, and linguistics field, while undeclared students had the lowest cGPA. The highest retention rates tended to be in engineering/architecture and foreign languages, literatures, and linguistics, although the highest retention rate for the More Than a Bachelor's Degree group was in social services and public administration (M = 0.97; *SD* = 0.19). Social services and public administration had among the lowest retention rates in the Less Than a Bachelor's Degree group (*M* = 0.83; *SD* = 0.37). Across the three parental education subgroups, undeclared students had much lower mean retention rates than those choosing all other majors, ranging from 0.68 (*SD* = 0.47) for the Less Than a Bachelor's Degree group to 0.74 (*SD* = 0.44) for the More Than a Bachelor's Degree group.

Differential Validity

Differential Validity by Major. The differential validity results show that across majors, the SAT is most predictive of cGPA in the STEM[3] fields, with multiple correlations of the three SAT sections and cumulative GPA ranging from 0.61 to 0.63 (see Table 7). However, one STEM field, computer science, was an exception, with a weaker multiple correlation found among these majors ($r = 0.50$). The weakest multiple correlation between the SAT and cGPA was among undeclared students ($r = 0.42$). Of the three SAT sections, SAT-W tended to be the strongest predictor for most majors, although SAT-M was the strongest for biological and biomedical sciences ($r = 0.59$), engineering/architecture ($r = 0.57$), and mathematics and statistics/physical sciences (r = 0.59) majors, while SAT-CR was the strongest for security and protective services ($r = 0.55$) majors as well as social services and public administration ($r = 0.55$) majors. When compared to HSGPA, the multiple correlation of the three SAT sections with cGPA was stronger than the HSGPA and cGPA correlation in most majors, except for communications/journalism (HSGPA $r = 0.57$; SAT $r = 0.57$), computer and information science (HSGPA $r = 0.52$; SAT $r = 0.50$), humanities and liberal arts (HSGPA $r = 0.58$; SAT $r = 0.56$), security and protective services (HSGPA r = 0.59; SAT r = 0.58), and those with undeclared majors (HSGPA $r = 0.44$; SAT $r = 0.42$). In addition, the SAT added incremental validity ($\Delta\ r$) over HSGPA in the prediction of cGPA (correlation of *HSGPA and cGPA* subtracted from the correlation of *SAT and HSGPA with cGPA*) for all majors, ranging from a low of 0.05 for undeclared majors to a high of 0.13 for foreign languages, literatures, and linguistics majors. Overall, the SAT added incremental validity of 0.09 over HSGPA in the prediction of cGPA for the full sample.

Differential Validity by Major and Gender. Table 8 includes the correlations (corrected for restriction of range) between SAT and HSGPA with cGPA by major and gender. The multiple correlations between the SAT and cGPA by major tended to be stronger for female than for male students, with the largest differences in communications/journalism (female $r = 0.63$; male $r = 0.43$); education (female $r = 0.62$; male $r = 0.52$); humanities and liberal arts (female $r = 0.61$; male $r = 0.50$); social sciences (female $r = 0.63$; male $r = 0.51$); and undeclared students (female $r = 0.50$; male $r = 0.38$). Similarly, for most majors there was a stronger relationship between HSGPA and cGPA for female compared to male students. For two major fields, computer and information science (female $r = 0.30$; male $r = 0.50$) and foreign languages, literatures, and linguistics (female $r = 0.57$; male $r = 0.63$), there was a stronger relationship between the SAT and cGPA for male versus female students. While SAT-M was the strongest predictor of cGPA for female and male students in the STEM fields (with the exception of computer and information science), SAT-W tended to have the strongest correlations with cGPA among the three sections for most other majors, and these correlations were typically stronger for female than for male students. The multiple correlations of SAT and HSGPA with cGPA ranged from 0.42 (computer and information science) to 0.71 (biological and biomedical science) for female students, and 0.43 (undeclared) to 0.71 (mathematics and statistics/physical sciences) for male students.

Overall, the incremental validity of the SAT for predicting cGPA over HSGPA was larger for female ($\Delta\ r = 0.11$) compared to male students ($\Delta\ r = 0.07$), and was particularly large for both female and male students majoring in foreign languages, literatures, and linguistics ($\Delta\ r = 0.17$ and $\Delta\ r = 0.13$, respectively). The incremental validity of HSGPA over the SAT was slightly larger for male compared to female students in the overall sample ($\Delta\ r = 0.08$ versus $\Delta\ r = 0.06$), but

3. In this study, biological and biomedical sciences, computer and information science, engineering/architecture, and mathematics and statistics/physical sciences were considered to be STEM major fields to be consistent with the National Center for Education Statistics (NCES) classification (Chen, 2009).

was particularly large for female students majoring in computer and information science ($\Delta r = 0.12$), and for male students majoring in communications/journalism ($\Delta r = 0.10$).

Differential Validity by Major and Race/Ethnicity. A number of the multiple correlations could not be computed by subgroup due to sample size. But among the comparisons that could be made, there were clear differences in the SAT and cGPA relationship by race/ethnicity within the major (see Table 9). The multiple correlations between the SAT and cGPA were strongest for white students in majors such as mathematics and statistics/physical sciences ($r = 0.64$); education ($r = 0.58$); business, management, and marketing ($r = 0.57$); and social sciences ($r = 0.57$). However, among black students, the relationship between SAT and cGPA was strongest in other majors, including communications/journalism ($r = 0.72$) and humanities and liberal arts ($r = 0.73$); among Hispanic students, this relationship was strongest in biological and biomedical sciences ($r = 0.66$) and health Professions and related clinical sciences ($r = 0.64$).

For Asian students, the strongest predictor of cGPA among the three SAT sections tended to be SAT-M, while for the other three racial/ethnic groups, SAT-W tended to be the strongest predictor. The relationship between HSGPA and cGPA tended to be strongest for white students across majors with two exceptions: Asian students majoring in communications/journalism ($r = 0.63$; $r = 0.59$ for white students) and black students majoring in humanities and liberal arts ($r = 0.64$; $r = 0.59$ for white students). The relationship between HSGPA and cGPA varied greatly by race/ethnicity for undeclared students, with the strongest relationship found among white students ($r = 0.48$) and the weakest relationship found among Asian students ($r < 0.01$). When compared, the relationship between SAT and cGPA tended to be stronger across majors (including undeclared) than the relationship between HSGPA and cGPA for Asian, black, and Hispanic students, while the opposite was true for white students. In other words, for students from underrepresented ethnic/racial groups, SAT scores tended to be more predictive of cGPA across majors than HSGPA.

Using the SAT and HSGPA together had a strong relationship with cGPA across majors by race/ethnicity, with the exception of undeclared students. The strongest multiple correlations were found among black students majoring in either humanities and liberal arts ($r = 0.79$) or communications/journalism ($r = 0.76$), Asian students majoring in communications/journalism ($r = 0.75$), and white students majoring in mathematics and statistics/physical sciences ($r = 0.74$).

The SAT provided a substantial amount of incremental validity over HSGPA for Asian students majoring in computer and information science ($\Delta r = 0.24$) and who were undeclared ($\Delta r = 0.20$); for black students who were majoring in communications/journalism ($\Delta r = 0.24$) or engineering/architecture ($\Delta r = 0.25$), and who were undeclared ($\Delta r = 0.21$); and for Hispanic students majoring in engineering/architecture ($\Delta r = 0.20$). The incremental validity of HSGPA was generally much smaller across majors and racial/ethnic subgroups than that of the SAT; one exception was for Hispanic students majoring in education, wherein the addition of HSGPA to the SAT provided an increment of 0.11 to the prediction of cGPA.

Differential Validity by Major and Parental Education Level. The multiple correlations between the three sections of the SAT and cGPA by major tended to be stronger for students in the More Than a Bachelor's Degree group, followed by the Bachelor's Degree group and then the Less Than a Bachelor's Degree group (see Table 10). For some majors, however, the Bachelor's Degree group had the strongest relationship between the SAT and cGPA across parental education groups: biological and biomedical sciences ($r = 0.65$); education ($r = 0.63$); foreign languages, literatures, and linguistics ($r = 0.68$); humanities and liberal arts ($r = 0.57$); and security and protective services ($r = 0.62$). Undeclared students in the three parental

education groups had the smallest multiple correlations between SAT and cGPA compared to the other majors, ranging from a low of 0.34 for the More than a Bachelor's Degree group to a high of 0.42 for the Bachelor's Degree group. Of the three SAT sections, SAT-W tended to be the strongest predictor for most majors across the three parental education groups, with the exception of students majoring in STEM fields, wherein SAT-M tended to be as predictive as SAT-W or more predictive than SAT-W.

The predictive validity of the HSGPA varied within the major by parental education group, with HSGPA being the strongest for the Bachelor's Degree group within certain majors (correlations ranging from 0.46 for students with undeclared majors to 0.62 for computer and information science majors) and strongest for the More Than a Bachelor's Degree group within other majors (correlations ranging from 0.41 for undeclared majors to 0.66 for agriculture/natural resources majors). One exception was that the relationship between HSGPA and cGPA was strongest in the Less Than a Bachelor's Degree group in security and protective services ($r = 0.61$) compared to the other two parental education level groups in that major. Students in the Less Than a Bachelor's Degree group tended to have stronger or equivalent correlations between the SAT and cGPA than between HSGPA and cGPA across majors (with some exceptions), while clear patterns for these correlations in the Bachelor's Degree group were not as apparent. The More Than a Bachelor's Degree group tended to have stronger or equivalent correlations between the HSGPA and cGPA compared to SAT and cGPA correlations across majors. Using both the SAT and HSGPA together to predict cGPA showed that this combination of predictors had the strongest relationship with cGPA across majors by parental education group, with multiple correlations ranging from 0.42 for undeclared students in the Less Than a Bachelor's Degree group to 0.74 for students majoring in agriculture/natural resources or engineering/architecture in the More Than a Bachelor's Degree group.

For students in the Less Than a Bachelor's Degree group, the SAT had the most incremental validity for those majoring in social services and public administration ($\Delta r = 0.24$). For students in the Bachelor's Degree and More Than a Bachelor's Degree groups, the incremental validity of the SAT was greatest for foreign language, literature, and linguistics majors ($\Delta r = 0.17$ and $\Delta r = 0.14$, respectively). The incremental validity of HSGPA over the SAT was less variable across majors for each parental education group.

Differential Prediction

Differential Prediction by Major. Tables 11 through 14 show the results of the differential prediction analyses by major category overall and by gender, race/ethnicity, and highest reported parental education level. Students with an undeclared major had the greatest overprediction by all predictors (ranging from -0.27 when the SAT and HSGPA were used together as predictors, to -0.34 for SAT-CR or SAT-M when either was used alone). The SAT overpredicted cGPA in the STEM majors, particularly in computer and information science (-0.13), engineering/architecture (-0.07), and, to a lesser extent, mathematics and statistics/physical sciences (-0.04). The SAT also overpredicted cGPA for students majoring in agriculture/natural resources (-0.07) and security and protective services (-0.07).

The SAT underpredicted cGPA for students majoring in education (0.17); health professions and related clinical science (0.11); foreign languages, literatures, and linguistics (0.09); and social services and public administration (0.07). For all other majors, the SAT predicted cGPA with residuals that were equal to or less than an absolute value of 0.05.

In general, the separate SAT sections (SAT-CR, SAT-M, and SAT-W) followed similar patterns of differential prediction as the SAT composite (three sections included as separate predictors). In the exception, SAT-M showed slightly greater underprediction for majors in communications/journalism; foreign languages, literatures, and linguistics; humanities and liberal arts; and social services/public administration. SAT-M also showed greater overprediction of cGPA for students majoring in STEM fields, particularly in engineering/architecture (-0.10) and mathematics and statistics/physical sciences (-0.07). Individually, SAT-CR and SAT-W each resulted in slightly less or no overprediction of cGPA for students majoring in engineering/architecture and mathematics and statistics/physical sciences.

When HSGPA was used as the sole predictor, there was greater underprediction of cGPA for students majoring in the humanities and liberal arts (0.10 compared to 0.05 for the SAT) and foreign languages, literatures, and linguistics (0.12 compared to 0.09 for the SAT). Using HSGPA as the sole predictor resulted in less overprediction of cGPA for students majoring in computer and information sciences (-0.07 compared to -0.13 for the SAT) and resulted in less underprediction for students majoring in education (0.11 compared to 0.17 for the SAT) and health professions and related clinical sciences (0.03 compared to 0.11 for the SAT).

For students majoring in foreign languages, literatures, and linguistics or security and protective services, and for undeclared students, using both the SAT and HSGPA as predictors reduced the magnitude of differential prediction compared to using either alone. However, for a number of major categories, the magnitude of differential prediction with both predictors was greater than that produced when either SAT scores or HSGPA was used alone. The difference in magnitude was very small (0.01-0.02), and occurred for biological and biomedical sciences; business, management, and marketing; communications/journalism; engineering/architecture; mathematics and statistics/physical sciences; and social services and public administration. This is likely related to the level of difficulty and/or grading practices of the major in college, and that in these majors, overprediction or underprediction can be slightly compounded by using both measures. For example, mathematics and statistics/physical sciences majors tended to have among the highest SAT scores and HSGPAs across the different major fields, yet they earned cGPAs that were not as high in comparison to their high school academic measures. This was due to the difficult nature of the college course work and the stringent grading standards in those fields.

Differential Prediction by Major and Gender. The differential prediction results by gender and major category are shown in Table 12. The SAT underpredicted female students' cGPA in all majors except for security and protective services (0.00) and computer and information science, in which cGPA for female students majoring in this subject was overpredicted (-0.07). This underprediction of cGPA by the SAT ranged from 0.03 to 0.22; the greatest underprediction was for female students majoring in education (0.22); health professions and related clinical sciences (0.15); foreign languages, literatures, and linguistics (0.14); humanities and liberal arts (0.13); business, management, and marketing (0.12); and communications/journalism (0.11). When HSGPA was used as a single predictor, there was also underprediction in these majors, but generally this occurred at a smaller magnitude. However, for female computer science majors, the use of HSGPA as a single predictor resulted in greater overprediction (-0.12) compared to the SAT (-0.07). The cGPA for undeclared majors was overpredicted to a lesser extent for female compared to male students. For female students with undeclared majors, HSGPA resulted in greater overprediction (-0.22) compared to the SAT (-0.18), whereas for male students with an undeclared major, the SAT resulted in greater overprediction (-0.43 compared to -0.39 for HSGPA).

In contrast to the underprediction for female students' cGPA, the SAT overpredicted male students' cGPA in all majors except for education, in which male students' cGPA was predicted with zero error, and social services and public administration, in which male students' cGPA was underpredicted (although there were only 28 male students at nine institutions in this major). The overprediction ranged from -0.43 for male students with an undeclared major to -0.03 for male students with a biological and biomedical sciences major. When HSGPA was used as the sole predictor, the magnitude of overprediction for male students was slightly smaller, with the exception of those majoring in the health professions and related clinical sciences and social services and public administration, in which the magnitude of overprediction was greater than that produced by the SAT.

Differential Prediction by Major and Race/Ethnicity. In most major fields, the SAT and HSGPA underpredicted cGPA for Asian students; however, the magnitude of underprediction by the SAT was relatively small for most majors and ranged from 0.05 (biological and biomedical sciences) to 0.15 (social services and public administration). The majors with the greatest underprediction for Asian students were those with the smallest number of students (e.g., 15 Asian students majored in social services and public administration). The SAT overpredicted cGPA for Asian students majoring in mathematics and statistics/physical sciences (-0.07) and computer and information science (-0.08) and for undeclared students (-0.35). There was a similar pattern of differential prediction when HSGPA was used as the sole predictor. For Asian students majoring in business, management, and marketing, using HSGPA alone resulted in the largest amount of underprediction (0.12), and for those majoring in mathematics and statistics/physical sciences, the use of HSGPA as a sole predictor resulted in the largest amount of overprediction (-0.10), with the exception of undeclared students (-0.37).

The SAT and HSGPA both overpredicted black students' cGPA in all majors. The greatest overprediction by the SAT occurred for black students who were undeclared (-0.46) and for those majoring in engineering/architecture (-0.30) and mathematics and statistics/physical sciences (-0.34). The SAT resulted in the most accurate prediction of cGPA for black students majoring in education (-0.04). When HSGPA was used as the sole predictor, the overprediction of black students' cGPA was greater than the SAT for all majors in which there were at least 20 students. This was most substantially true for those who majored in social services and public administration (SAT = -0.13; HSGPA = -0.37), health professions and related clinical sciences (SAT = -0.10; HSGPA = -0.30), and biological and biomedical sciences (SAT = -0.20; HSGPA = -0.35).

The SAT also tended to overpredict cGPA for Hispanic students in most majors, although it slightly underpredicted cGPA for students majoring in communications/journalism, education, health professions and related clinical sciences, and security and protective services. Similar to the results for black students, HSGPA overpredicted cGPA for Hispanic students in all majors. The magnitude of the overprediction of both HSGPA and SAT was generally smaller for Hispanic students than that for black students. The greatest overprediction by the SAT among Hispanic students occurred for undeclared majors (-0.34), social services and public administration majors (-0.21), and computer and information science majors (-0.19). However, it should be noted that there were a relatively small number of Hispanic students majoring in these areas. Similar to the results for black students, in all majors the use of HSGPA as the sole predictor had a higher magnitude of overprediction than the SAT for Hispanic students. For example, overprediction for biological and biomedical sciences majors was -0.11 when the SAT was the sole predictor, compared to -0.23 when HSGPA was the sole predictor.

For white students, both the SAT and HSGPA similarly tended to overpredict cGPA in agriculture/natural sciences, computer and information science, engineering/architecture, and security and protective services, as well as for undeclared students. The SAT and HSGPA predicted cGPA for white students majoring in mathematics and statistics/physical sciences (SAT = -0.01; HSGPA = 0.01) and biological and biomedical sciences (SAT = 0.02; HSGPA = 0.01) with little error. There was some underprediction of cGPA by both SAT and HSGPA for students majoring in business, management, and marketing; communications/journalism; education; foreign languages, literatures, and linguistics; health professions and related clinical sciences; humanities and liberal arts; social sciences; and social services and public administration. The largest differences in the differential prediction of cGPA by SAT versus HSGPA for white students was in computer and information science (SAT =- 0.13; HSGPA = -0.06); foreign languages, literatures, and linguistics (SAT = 0.10; HSGPA = 0.17); and health professions and related clinical sciences (SAT = 0.14; HSGPA = 0.07).

Differential Prediction by Major and Parental Education Level. The differential prediction results by highest reported parental education level and major category can be found in Table 14. The results reveal different patterns of prediction depending on parental education level. For example, when the SAT was used as the sole predictor, the cGPA for foreign languages, literatures, and linguistics majors was most accurately predicted for students whose parents did not attain a bachelor's degree (0.00), but was underpredicted for students whose parents earned a bachelor's degree (0.13) or higher (0.11). As parental education levels increased, the SAT slightly underpredicted more frequently than overpredicted cGPA across majors.

In the Less Than a Bachelor's Degree group, the SAT tended to slightly overpredict students' cGPA across majors. The greatest amount of overprediction of cGPA by the SAT in the Less Than a Bachelor's Degree group was found among undeclared students (-0.34), followed by mathematics and statistics/physical sciences majors (-0.12). Exceptions to this overprediction of cGPA by the SAT included a small amount of underprediction of cGPA by the SAT among communications/journalism (0.01), humanities and liberal arts (0.02), and health professions and related sciences (0.08) majors, with greater underprediction found among education (0.16) majors. For this parental education group, HSGPA also overpredicted students' cGPA across majors and only resulted in underprediction among education majors (0.05). Across the majors, there tended to be less error in prediction when the SAT was used alone compared to when the HSGPA was used alone. The largest differences in the differential prediction of cGPA by the SAT versus HSGPA for students in the Less than Bachelor's Degree group were among health professions and related clinical sciences majors. For this group, the SAT underpredicted GPA, and HSGPA overpredicted GPA (SAT = 0.08; HSGPA = -0.07).

For those students whose parents had earned a bachelor's degree, there tended to be some overprediction of cGPA by the SAT in some of the STEM majors and among those with undeclared majors, while there was slight underprediction by the SAT in other majors. There were similar patterns for HSGPA. The greatest underprediction of cGPA by the SAT occurred among education majors (0.18), and the greatest overprediction by the SAT was found among undeclared students (-0.31) and computer and information science majors (-0.15). The greatest underprediction of cGPA by HSGPA occurred among foreign languages, literatures, and linguistics majors (0.14), closely followed by education majors (0.13). The greatest overprediction of cGPA by HSGPA occurred among undeclared students (-0.29), computer and information science majors (-0.08), and engineering/architecture majors (-0.07). The largest differences in the differential prediction of cGPA by SAT versus HSGPA for students in the Bachelor's Degree group were in computer and information science (SAT = -0.15; HSGPA = -0.08) and health professions and related clinical sciences (SAT = 0.14; HSGPA = 0.07).

For those students whose parents earned more than a bachelor's degree, there tended to be some overprediction of cGPA by the SAT in some of the STEM majors and among those with undeclared majors, but there was slightly more underprediction than overprediction of cGPA across the majors for this parental education group. HSGPA tended more often to underpredict rather than overpredict cGPA for students whose parents earned more than a bachelor's degree. The greatest underprediction of cGPA by the SAT occurred among education majors (0.20), closely followed by social services and public administration majors (0.19). The greatest overprediction by the SAT occurred among undeclared students (-0.30), and computer and information science majors (-0.16). The greatest underprediction of cGPA by HSGPA occurred among foreign languages, literatures, and linguistics majors (0.21), closely followed by social services and public administration majors (0.20). The greatest overprediction of cGPA by HSGPA occurred among undeclared students (-0.22), with very slight overprediction of cGPA found among computer and information science majors (-0.04). The largest differences in the differential prediction of cGPA by the SAT versus HSGPA for students in the More Than a Bachelor's Degree group was in computer and information science (SAT =- 0.16; HSGPA = -0.04) and foreign languages, literatures, and linguistics (SAT = 0.11; HSGPA = 0.21).

Discussion

The results of this research show that the relationship between SAT and HSGPA and cGPA varies by major field, and that it is useful to conduct these types of analyses and document this information for future use and reference by higher education researchers and college admission professionals. For example, the differential validity analyses in this study showed that the SAT tends to be most predictive of cGPA in the STEM majors, and adds incremental validity to HSGPA in the prediction of cGPA across all majors, ranging from 0.05 for undeclared majors to 0.13 for foreign languages, literatures, and linguistics majors. Further subgroup analyses by gender, race/ethnicity, and highest parental education level showed more nuanced patterns across majors. The differential prediction analyses showed that SAT slightly overpredicts cGPA in certain majors, including the STEM fields, while it slightly underpredicts cGPA in other majors, including education; health professions and related clinical science; humanities and liberal arts; foreign languages, literatures, and linguistics; and social services and public administration. When HSGPA is used alone, there is a similar pattern of over- and underprediction of cGPA as that of the SAT. Similar to the differential validity results, further subgroup analyses by gender, race/ethnicity, and highest parental

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education level showed more nuanced patterns across majors. It is likely that the differences in the SAT, HSGPA and cGPA relationships by major field are due to such factors as the differences in the nature of the college course work by major, the different grading practices, student self-selection into different majors due to interests and abilities, and the academic "culture" (e.g., male-dominated or highly competitive) of the different majors (Grandy, 1987a, 1987b; Pascarella & Terenzini, 2005; Pennock-Román, 1994). Therefore, congruent with previous research (Biglan, 1973; Goldman & Hudson, 1973; Grandy, 1987a, 1987b; Pascarella & Terenzini, 2005; Pennock-Román, 1994; Willingham, Lewis, Morgan, & Ramist, 1990), we would not expect the strength of relationship between SAT and HSGPA with cGPA to be the same for all the majors examined in this study, given these aforementioned differences.

The starkest differences in the relationship between both SAT and HSGPA with cGPA across majors were found among undeclared students versus students enrolled in defined major fields. The undeclared students displayed the weakest relationship between the two academic measures, using the criterion of cGPA. Students with undeclared majors also had remarkably lower retention rates to the third year of college. The SAT, as well as HSGPA, also showed the greatest overprediction of cGPA for undeclared students, indicating that these students display much weaker performance in college than their high school performance would have predicted. Previous research has also shown that uncertainty with regard to career goals in college leads to attrition, lower academic achievement, anxiety, and confusion with regard to one's identity (Hartman & Fuqua, 1983; Leppel, 2001; Plaud, Baker, & Groccia, 1990; St. John, Hu, Simmons, Carter, & Weber, 2004). These findings bring to mind the proverbial chicken-versus-egg dilemma, given that it is unclear whether the undeclared students have not declared a major because they were asked to leave a major field in which they were previously enrolled and performing poorly, or they were performing poorly in college because they had not found their academic passion or department in which they felt a sense of academic belonging at the institution. It would be useful to focus future research on interventions to guide these students to successful major choice and college completion.

For all declared major fields with the exception of one (computer science, $r = 0.50$), the corrected multiple correlations between the SAT (critical reading, mathematics, and writing) and cGPA were in the high 0.50s or low 0.60s, representing a strong relationship between the two measures. The strongest correlations tended to be found in the STEM fields, although computer science students tended to perform slightly differently in high school and college than students in other STEM majors. This is consistent with prior research on STEM major fields, and indicates that students majoring in the computer science field do not typically follow the same academic performance patterns as students in other STEM major fields (Shaw & Barbuti, 2010). The SAT also slightly overpredicted cGPA in the STEM majors,

It is likely that the differences in the SAT, HSGPA and cGPA relationships by major field are due to such factors as … the academic "culture" (e.g., male-dominated or highly competitive) of the different majors.

likely because these majors are considered to be more academically difficult or have more stringent grading practices; therefore, students earn lower cGPAs than they would have in other academic fields (Biglan, 1973; Goldman & Hudson, 1973). There was underprediction of cGPA by the SAT in a few other majors, most notably among education majors. This underprediction is also likely related to the less stringent grading practices in these fields (Willingham et al., 1990).

There were apparent differences in the distribution of female and male students in the different academic majors in this study. For example, one of the larger differences was within engineering/architecture, in which 6% of all female versus 23% of all male students chose to major. With the exceptions of students majoring in computer and information science and foreign languages, literatures, and linguistics, the relationship between SAT and cGPA tended to be stronger for female than male students. This is consistent with previous research on the differential validity of the SAT by gender that shows stronger correlations for female versus male students (Mattern et al., 2008). The starkest difference in the SAT and cGPA relationship between female and male students was in communications/journalism, in which the relationship was notably weaker for male students (the female correlation was 0.20 higher than the male correlation). There were also stark differences in the correlations between SAT and cGPA for male and female computer and information science majors, although because of the smaller sample size of female computer and information science majors ($n = 48$), it is difficult to make conclusions about these findings. The weakest SAT and cGPA relationship among all majors was for male undeclared students ($r = 0.38$).

With regard to differential prediction by gender and major, the SAT tended to underpredict cGPA slightly for female students in all major fields except for undeclared students and computer and information science majors, with the largest underprediction of cGPA occurring for education majors and the smallest underprediction of cGPA occurring for STEM majors. A number of potential reasons for underprediction of cGPA (by both admission tests and HSGPA) have been offered to explain this pattern, which is typically found in differential prediction studies. Potential reasons include hypotheses that female students tend to have better study habits, are more conscientious with regard to schoolwork, attend class more frequently, and have greater academic motivation, all of which are positively linked to college performance (e.g., Stricker, Rock, & Burton, 1991; Wainer & Steinberg, 1992). As mentioned previously, the greatest underprediction was for female education majors, which may be related to the less stringent grading system in this field (Willingham et al., 1990). The opposite was true for male students, with the SAT slightly overpredicting cGPA for most major fields, except for education and social services and public administration majors. The greatest overprediction of cGPA was for male undeclared students, with a mean residual of 0.43.

The findings by major and race/ethnicity showed that there was some variation of enrollment by the different racial/ethnic groups by major. Hispanic and black students showed largely similar distributions across majors, with larger percentages of students in the social sciences. Asian students, however, tended to cluster around the STEM-focused disciplines, and white students were most concentrated in business, management, and marketing; engineering/architecture; humanities and liberal arts, and social sciences. In several majors, such as communications/journalism and humanities and liberal arts, the SAT and cGPA relationship was stronger for black and Hispanic students when comparing across racial/ethnic groups. The correlation was stronger for white students across a few other majors, including business, management, and marketing. St. John et al. (2004) also found differences in college outcomes, particularly persistence, between white and black students within the same majors, suggesting that there are cultural nuances and characteristics of majors that

differentially affect students from different cultural backgrounds and experiences. While 5%–7% of all racial/ethnic groups had not decided on a major at the beginning of their third year of college, there were large differences between the SAT and cGPA relationship across undeclared students by racial/ethnic group, with black students having the strongest relationship and Asian students having the weakest relationship by far. It is unclear whether there may be different characteristics of undeclared students by race/ethnicity that differentially impact the SAT and cGPA relationship. For Asian, black, and Hispanic students, the SAT was a stronger predictor of cGPA than HSGPA across most majors, including undeclared students.

With regard to the differential prediction results of the SAT and cGPA by major and race/ethnicity, there was some underprediction of Asian students across majors, suggesting that they perform better in college than their SAT scores or HSGPA would predict. There was primarily overprediction of cGPA by SAT and HSGPA for black students and, to a slightly lesser degree, Hispanic students across majors, with the largest overprediction occurring for undeclared majors. The overprediction of cGPA when HSGPA was used alone tended to be even greater than that of the SAT when used alone, across majors. As Mattern et al. (2008) suggested in a recent study, it is important for future research to examine why this overprediction of college performance is occurring for underrepresented minority students. Difficulty adjusting to the college environment, perceived racial climate, distance from family, and financial/work obligations while in college may be contributing to their lower performance in college than predicted for underrepresented minority students across major fields (e.g., Gurin, Matlock, Wade-Golden, & Gurin, 2004; Lucas, 1993).

Analyses by major and highest reported parental education group showed relatively similar distributions across the majors for the three groups, although there were notably more engineering/architecture majors in the More Than a Bachelor's Degree group than in the Less Than a Bachelor's Degree group. Correlations between the SAT and cGPA tended to be highest across majors for the More Than a Bachelor's Degree group, followed by the Bachelor's Degree group and then the Less Than a Bachelor's Degree group, with some exceptions. For the Less Than a Bachelor's Degree group, the relationship between the SAT and cGPA was stronger than that of HSGPA and cGPA across most of the majors. Interestingly, the lowest correlation found among the three groups was for students with undeclared majors in the More Than a Bachelor's Degree group. It is possible that this group of students is largely composed of those who had been enrolled in a major field but were asked to leave due to poor academic performance for a variety of reasons.

With regard to the differential prediction results, one finding was that as parental education levels increased, the SAT slightly underpredicted more frequently than overpredicted cGPA across majors. The underprediction of cGPA by the SAT slightly decreased for Education majors as parental education level decreased. Differential prediction of HSGPA followed the same general pattern. For example, there were notable differences in the prediction of cGPA by both the SAT and HSGPA for social services majors by parental education group, with the largest underprediction for students in the More Than a Bachelor's Degree group, followed by lesser underprediction for the Bachelor's Degree group and slight overprediction for the Less Than a Bachelor's Degree group. This finding should be interpreted with some caution, however, because sample sizes were not as substantial as in other majors. Both HSGPA and the SAT overpredicted undeclared students' cGPAs, with the magnitude of overprediction increasing as parental education level decreased.

Limitations and Future Research

There are a few limitations of this study that warrant mention. First, while many of the groups studied had a sufficient number of students to examine and from which to draw conclusions, some majors did not have enough students to make broad conclusions by subgroup. Related to this is the caveat that when comparing the results across majors and subgroups, it is important to take into account that the groups being compared may have very different sample sizes; therefore, findings should be interpreted with caution. Additionally, it would have been useful to study student gender and race/ethnicity by major simultaneously; however, small sample sizes in many of these groups by major prevented this fine-grained level of analysis.

Future research should replicate the analyses in this study with a different or broader sample of institutions and students to determine the reliability and generalizability of the results. Also, it would be useful to examine differential validity and prediction by major at graduation; focusing on cGPA at that time might help to determine whether there are any differences in findings when more advanced course work by major is factored into cGPA. Other future differential validity and prediction studies examining the relationship between the SAT and college outcomes by major may seek to analyze results by the characteristics of the institutions. For example, it may be interesting to study whether there are differences by institution and major based on the types of majors offered at the institution, or whether the institution is STEM focused or more of a liberal arts institution.

Also, future research should study the academic trajectories of undeclared students and work on minimizing academic difficulties and focusing on major choice and fit for these students. For example, there may be interesting differences between students that had not decided on any major at all during the first two years of college versus those that had previously been enrolled in a major and then were either asked to leave or chose to leave that major. Additionally, a contribution of this study is that it allowed for a nuanced understanding of the relationship between the SAT and HSGPA with FYGPA by relatively specific major fields. Many studies only examine very broad academic domains as opposed to specific majors. Because there were some unique characteristics of student performance and prediction by the different majors and subgroups, it would be useful for future research to focus on the academic and social cultures within the different majors that serve as supports or barriers for different enrolled student groups.

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Table 1.

Descriptive Statistics for Institutional Characteristics

Institutional Characteristic		Sample	
		k	%
U.S. Region	Midwest	6	15%
	Mid-Atlantic	7	18%
	New England	9	23%
	South	3	8%
	Southwest	4	10%
	West	10	26%
Control	Public	16	41%
	Private	23	59%
Selectivity	Admits under 50%	4	10%
	Admits 50% to 75%	20	51%
	Admits over 75%	15	38%
Size	Small	9	23%
	Medium	15	38%
	Large	9	23%
	Very large	6	15%
Bachelor's Degrees Awarded in STEM Fields	0%–12%	11	28%
	13%–24%	16	41%
	25%–100%	12	31%

Note: Institution sizes are categorized by the number of undergraduates as follows: small = 750 to 1,999; medium = 2,000 to 7,499; large = 7,500 to 14,999; and very large = 15,000 or more.

Table 2.

Categorization of CIP Codes into Major Categories

Major Category	CIP Code	CIP Description
Agriculture/Natural Resources	1	Agriculture, Agriculture Operations, and Related Sciences
	3	Natural Resources and Conservation
Biological and Biomedical Sciences	26	Biological and Biomedical Sciences
	60	Residency Programs
Business, Management, and Marketing	52	Business, Management, Marketing, and Related Support Services
Communications/Journalism	9	Communication, Journalism, and Related Programs
	10	Communications Technologies/Technicians and Support Services
	11	Computer and Information Sciences and Support Services
Education	13	Education
Engineering/Architecture	4	Architecture and Related Services
	14	Engineering
	15	Engineering Technologies/Technicians
Foreign Languages, Literatures, and Linguistics	16	Foreign Languages, Literatures, and Linguistics
Health Professions and Related Clinical Sciences	34	Health-Related Knowledge and Skills
	51	Health Professions and Related Clinical Sciences
Humanities and Liberal Arts	23	English Language and Literature/Letters
	24	Liberal Arts and Sciences, General Studies, and Humanities
	38	Philosophy and Religious Studies
	39	Theology and Religious Vocations
	50	Visual and Performing Arts
	54	History
Mathematics and Statistics/Physical Sciences	27	Mathematics and Statistics
	40	Physical Sciences
Psychology	19	Family and Consumer Sciences/Human Sciences
Security and Protective Services	43	Security and Protective Services
Social Sciences	42	Psychology
	45	Social Sciences
Social Services and Public Administration	44	Public Administration and Social Service Professions
Other	5	Area, Ethnic, Cultural, and Gender Studies
	12	Personal and Culinary Services
	22	Legal Professions and Studies
	25	Library Science
	30	Multi-/Interdisciplinary Studies
	31	Parks, Recreation, Leisure, and Fitness Studies
	41	Science Technologies/Technicians
	46	Construction Trades
	49	Transportation and Materials Moving

Table 3.

Descriptive Statistics of Academic Measures by Major Category

				SAT-CR		SAT-M		SAT-W		HSGPA		cGPA		Retention to Year 3	
Major Category	***k***	***n***	**%**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Agriculture/Natural Resources	24	514	1%	564	82.6	570	77.1	548	80.7	3.61	0.51	3.03	0.57	0.93	0.26
Biological and Biomedical Sciences	39	3,329	8%	582	91.4	608	90.6	575	92.0	3.80	0.45	3.17	0.58	0.91	0.28
Business, Management, and Marketing	36	6,259	16%	541	88.8	577	91.3	537	88.8	3.58	0.52	3.07	0.59	0.91	0.28
Communications/ Journalism	35	2,616	7%	553	89.0	548	89.0	551	86.6	3.58	0.51	3.10	0.54	0.94	0.25
Computer and Information Science	37	901	2%	588	94.6	633	87.4	566	94.0	3.62	0.48	2.95	0.64	0.90	0.30
Education	27	2,126	5%	521	85.5	531	86.8	519	84.6	3.55	0.50	3.15	0.57	0.89	0.31
Engineering/ Architecture	31	5,509	14%	593	84.4	657	76.1	579	85.1	3.80	0.43	3.08	0.59	0.95	0.22
Foreign Languages, Literatures, and Linguistics	30	603	2%	606	96.4	592	90.6	601	97.5	3.76	0.46	3.30	0.54	0.94	0.24
Health Professions and Related Clinical Sciences	30	2,417	6%	535	84.2	557	85.4	537	81.4	3.70	0.46	3.16	0.54	0.89	0.31
Humanities and Liberal Arts	39	5,236	13%	587	93.8	568	88.9	575	90.7	3.61	0.49	3.19	0.55	0.92	0.28
Mathematics and Statistics/Physical Sciences	35	1,310	3%	591	95.1	639	89.7	577	93.5	3.78	0.45	3.14	0.60	0.93	0.25
Security and Protective Services	18	623	2%	501	80.1	515	83.8	494	81.9	3.29	0.50	2.86	0.63	0.87	0.33
Social Sciences	39	5,527	14%	584	96.0	580	96.6	575	94.6	3.65	0.48	3.14	0.55	0.93	0.26
Social Services and Public Administration	20	271	1%	532	88.1	517	92.4	520	89.8	3.51	0.50	3.03	0.59	0.90	0.29
Undeclared	30	2,199	6%	540	100.6	557	103.3	533	99.3	3.46	0.54	2.72	0.65	0.70	0.46
Total	39	39,440	100%	566	94.3	585	96.9	558	92.4	3.65	0.50	3.10	0.59	0.91	0.29

Table 4.

Descriptive Statistics of Academic Measures by Major Category and Gender

				Female											
				SAT-CR		SAT-M		SAT-W		HSGPA		cGPA		Retention to Year 3	
Major Category	*k*	*n*	%	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Agriculture/Natural Resources	22	293	1%	570	84.8	568	76.4	562	82.3	3.71	0.50	3.15	0.54	0.94	0.24
Biological and Biomedical Sciences	39	1,971	9%	582	92.0	595	90.8	578	92.1	3.83	0.42	3.18	0.56	0.91	0.29
Business, Management, and Marketing	36	2,803	13%	539	88.7	565	91.7	544	88.5	3.66	0.49	3.17	0.56	0.93	0.26
Communications/ Journalism	35	1,833	9%	553	86.2	541	87.4	555	85.0	3.65	0.47	3.18	0.50	0.94	0.23
Computer and Information Science	18	80	<1%	574	113.6	603	102.2	577	94.5	3.81	0.39	3.02	0.63	0.93	0.26
Education	27	1,687	8%	521	84.7	526	85.7	522	83.9	3.59	0.48	3.19	0.56	0.89	0.31
Engineering/ Architecture	28	1,226	6%	603	87.7	650	75.0	599	81.9	3.90	0.38	3.20	0.55	0.96	0.19
Foreign Languages, Literatures, and Linguistics	30	439	2%	609	95.1	586	90.0	606	93.5	3.80	0.41	3.35	0.51	0.94	0.24
Health Professions and Related Clinical Sciences	30	1,959	9%	536	84.2	552	83.0	541	79.9	3.71	0.44	3.21	0.51	0.89	0.31
Humanities and Liberal Arts	39	3,175	15%	583	94.8	555	85.5	577	91.0	3.66	0.47	3.25	0.53	0.92	0.27
Mathematics and Statistics/Physical Sciences	35	572	3%	582	97.2	615	91.3	579	95.6	3.84	0.41	3.19	0.59	0.93	0.26
Security and Protective Services	18	279	1%	504	83.1	505	82.9	506	84.5	3.39	0.49	2.96	0.61	0.87	0.34
Social Sciences	39	3,343	16%	577	96.5	562	94.1	573	93.7	3.68	0.46	3.18	0.55	0.92	0.27
Social Services and Public Administration	19	243	1%	529	85.4	511	88.3	520	90.5	3.53	0.49	3.03	0.60	0.90	0.30
Undeclared	29	1,054	5%	528	98.3	529	99.5	529	97.1	3.48	0.54	2.81	0.65	0.67	0.47
Total	39	20,957	100%	561	94.7	563	93.7	560	91.9	3.69	0.47	3.17	0.56	0.91	0.29

Table 4. *(continued)*

Descriptive Statistics of Academic Measures by Major Category and Gender

				Male											
				SAT-CR		SAT-M		SAT-W		HSGPA		cGPA		Retention to Year 3	
Major Category	*k*	*n*	%	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Agriculture/Natural Resources	20	221	1%	557	79.2	573	78.2	530	75.1	3.48	0.49	2.87	0.58	0.92	0.27
Biological and Biomedical Sciences	37	1,358	7%	582	90.5	627	86.9	569	91.6	3.75	0.48	3.14	0.60	0.92	0.28
Business, Management, and Marketing	35	3,456	19%	542	88.8	587	89.8	531	88.6	3.51	0.53	3.00	0.60	0.90	0.30
Communications/ Journalism	34	783	4%	552	95.4	563	90.9	540	89.4	3.42	0.57	2.92	0.58	0.92	0.27
Computer and Information Science	35	821	4%	590	92.5	636	85.3	565	93.9	3.60	0.48	2.95	0.64	0.90	0.30
Education	22	439	2%	521	88.6	549	88.6	506	85.9	3.41	0.53	2.96	0.59	0.90	0.31
Engineering/ Architecture	30	4,283	23%	590	83.2	659	76.2	573	85.2	3.77	0.44	3.05	0.60	0.95	0.22
Foreign Languages, Literatures, and Linguistics	22	164	1%	599	99.8	609	90.3	588	106.8	3.65	0.54	3.16	0.59	0.93	0.25
Health Professions and Related Clinical Sciences	25	458	2%	534	84.3	580	91.5	521	85.7	3.63	0.51	2.98	0.61	0.87	0.33
Humanities and Liberal Arts	37	2,061	11%	593	91.8	589	90.1	573	90.2	3.53	0.52	3.09	0.56	0.90	0.29
Mathematics and Statistics/Physical Sciences	33	738	4%	598	92.9	658	83.8	575	91.8	3.74	0.48	3.09	0.60	0.94	0.24
Security and Protective Services	18	344	2%	499	77.6	522	83.9	485	78.5	3.20	0.49	2.78	0.62	0.88	0.32
Social Sciences	36	2,184	12%	594	94.4	607	94.1	577	95.8	3.59	0.50	3.08	0.55	0.94	0.24
Social Services and Public Administration	9	28	<1%	564	105.3	571	110.4	517	85.5	3.37	0.53	3.06	0.57	0.96	0.19
Undeclared	29	1,145	6%	551	101.4	583	99.9	537	101.2	3.44	0.55	2.64	0.64	0.72	0.45
Total	37	18,483	100%	572	93.4	611	94.2	557	93.0	3.60	0.52	3.01	0.61	0.91	0.29

Table 5.

Descriptive Statistics of Academic Measures by Major Category and Race/Ethnicity

				Asian, Asian American, or Pacific Islander											
				SAT-CR		SAT-M		SAT-W		HSGPA		cGPA		Retention to Year 3	
Major Category	*k*	*n*	%	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Agriculture/Natural Resources	10	12	<1%	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r
Biological and Biomedical Sciences	32	600	17%	590	94.3	652	85.7	590	95.4	3.84	0.43	3.27	0.55	0.92	0.27
Business, Management, and Marketing	28	586	16%	563	107.1	628	99.7	564	101.1	3.70	0.48	3.25	0.58	0.96	0.20
Communications/ Journalism	21	156	4%	568	86.6	582	94.6	563	90.4	3.68	0.44	3.17	0.51	0.97	0.18
Computer and Information Science	18	98	3%	573	105.6	663	90.2	557	110.0	3.66	0.43	3.02	0.59	0.95	0.22
Education	16	75	2%	537	83.0	579	93.6	539	76.7	3.69	0.44	3.18	0.56	0.93	0.25
Engineering/ Architecture	22	754	21%	593	94.7	688	71.6	591	92.0	3.80	0.41	3.15	0.57	0.97	0.18
Foreign Languages, Literatures, and Linguistics	12	49	1%	565	99.1	606	85.4	575	119.0	3.59	0.49	3.16	0.57	1.00	0.00
Health Professions and Related Clinical Sciences	20	169	5%	544	103.4	610	91.6	550	93.4	3.73	0.46	3.24	0.55	0.85	0.36
Humanities and Liberal Arts	30	273	8%	586	102.8	602	92.3	576	97.1	3.68	0.43	3.24	0.48	0.93	0.26
Mathematics and Statistics/Physical Sciences	22	156	4%	554	110.2	650	88.6	551	99.6	3.77	0.38	3.08	0.52	0.96	0.21
Security and Protective Services	5	17	<1%	508	69.8	567	64.0	500	87.7	3.61	0.43	3.16	0.37	0.94	0.24
Social Sciences	30	441	12%	591	100.6	621	98.8	589	100.4	3.70	0.44	3.20	0.50	0.95	0.21
Social Services and Public Administration	5	15	<1%	543	75.8	533	108.9	517	58.4	3.71	0.40	3.21	0.40	0.93	0.25
Undeclared	18	183	5%	556	107.2	609	104.6	548	100.3	3.60	0.47	2.77	0.56	0.75	0.43
Total	38	3,584	100%	577	100.8	638	95.7	575	98.2	3.74	0.44	3.18	0.56	0.94	0.25

Note: Cells with fewer than 15 students are not reported (n/r).

Table 5. *(continued)*

Descriptive Statistics of Academic Measures by Major Category and Race/Ethnicity

				Black or African American											
				SAT-CR		SAT-M		SAT-W		HSGPA		cGPA		Retention to Year 3	
Major Category	*k*	*n*	%	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Agriculture/Natural Resources	6	16	1%	513	102.7	515	72.7	511	77.7	3.42	0.63	2.87	0.52	0.69	0.46
Biological and Biomedical Sciences	30	192	10%	511	90.9	520	85.3	501	86.0	3.60	0.53	2.70	0.64	0.89	0.32
Business, Management, and Marketing	27	330	17%	492	85.6	504	89.4	482	84.6	3.42	0.54	2.70	0.63	0.88	0.32
Communications/ Journalism	28	145	7%	513	85.4	488	80.8	502	89.6	3.39	0.60	2.85	0.55	0.96	0.20
Computer and Information Science	14	44	2%	533	105.3	551	98.1	518	89.0	3.53	0.49	2.66	0.54	0.91	0.29
Education	14	60	3%	468	73.0	470	77.1	463	75.1	3.31	0.75	2.74	0.58	0.90	0.30
Engineering/ Architecture	16	231	12%	546	76.7	594	77.2	538	85.3	3.60	0.51	2.67	0.56	0.96	0.20
Foreign Languages, Literatures, and Linguistics	7	12	1%	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r
Health Professions and Related Clinical Sciences	17	142	7%	480	81.5	489	82.9	480	80.8	3.55	0.54	2.73	0.61	0.89	0.32
Humanities and Liberal Arts	32	204	10%	525	90.8	498	87.3	515	87.9	3.45	0.53	2.83	0.61	0.91	0.29
Mathematics and Statistics/Physical Sciences	19	49	3%	518	82.1	537	90.2	503	95.6	3.41	0.65	2.60	0.74	0.84	0.37
Security and Protective Services	11	37	2%	448	76.8	454	83.5	439	69.3	3.25	0.50	2.53	0.68	0.81	0.39
Social Sciences	33	339	17%	526	89.3	502	88.7	513	81.3	3.50	0.57	2.86	0.59	0.94	0.24
Social Services and Public Administration	12	22	1%	482	87.2	475	94.0	451	98.6	3.52	0.43	2.59	0.61	0.91	0.29
Undeclared	20	122	6%	468	77.9	473	79.1	466	81.7	3.18	0.60	2.33	0.63	0.65	0.48
Total	37	1,945	100%	509	89.0	511	91.8	500	87.4	3.47	0.56	2.72	0.62	0.89	0.31

Note: Cells with fewer than 15 students are not reported (n/r).

Table 5. *(continued)*

Descriptive Statistics of Academic Measures by Major Category and Race/Ethnicity

				Hispanic, Latino, or Latin American											
				SAT-CR		SAT-M		SAT-W		HSGPA		cGPA		Retention to Year 3	
Major Category	*k*	*n*	%	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Agriculture/Natural Resources	6	9	<1%	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r
Biological and Biomedical Sciences	28	227	9%	551	87.2	565	93.9	538	87.0	3.78	0.47	2.94	0.57	0.89	0.31
Business, Management, and Marketing	32	378	14%	512	82.5	540	92.6	512	82.0	3.60	0.55	2.95	0.55	0.89	0.31
Communications/ Journalism	26	189	7%	535	85.6	535	80.0	539	83.0	3.78	0.44	3.08	0.51	0.93	0.25
Computer and Information Science	10	49	2%	547	87.0	593	91.2	541	90.2	3.60	0.57	2.80	0.52	0.90	0.30
Education	16	115	4%	518	86.7	515	85.5	509	84.6	3.63	0.53	2.95	0.55	0.88	0.33
Engineering/ Architecture	20	269	10%	565	82.0	625	82.6	556	81.9	3.85	0.39	3.06	0.51	0.94	0.23
Foreign Languages, Literatures, and Linguistics	18	74	3%	547	84.7	538	83.5	550	82.2	3.79	0.47	3.02	0.57	0.93	0.25
Health Professions and Related Clinical Sciences	20	143	5%	489	83.2	512	79.5	500	74.7	3.70	0.46	2.96	0.52	0.85	0.35
Humanities and Liberal Arts	30	358	14%	560	92.1	541	84.7	550	85.6	3.64	0.47	3.04	0.54	0.91	0.28
Mathematics and Statistics/Physical Sciences	19	65	2%	555	86.6	615	88.9	534	85.5	3.83	0.42	2.96	0.50	0.89	0.31
Security and Protective Services	10	42	2%	492	91.0	511	102.9	486	88.6	3.47	0.38	2.90	0.56	0.81	0.39
Social Sciences	34	508	19%	549	91.4	546	93.9	539	89.6	3.70	0.45	3.01	0.54	0.94	0.24
Social Services and Public Administration	7	18	1%	485	80.8	471	91.0	486	70.7	3.46	0.43	2.59	0.63	0.72	0.45
Undeclared	18	195	7%	516	88.6	533	103.1	504	87.6	3.59	0.50	2.63	0.61	0.69	0.46
Total	39	2,639	100%	538	90.0	550	94.9	531	86.9	3.69	0.48	2.96	0.55	0.89	0.31

Note: Cells with fewer than 15 students are not reported (n/r).

Table 5. *(continued)*

Descriptive Statistics of Academic Measures by Major Category and Race/Ethnicity

				White											
				SAT-CR		SAT-M		SAT-W		HSGPA		cGPA		Retention to Year 3	
Major Category	*k*	*n*	%	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Agriculture/Natural Resources	23	429	2%	564	80.8	570	76.3	548	79.6	3.62	0.50	3.04	0.56	0.95	0.23
Biological and Biomedical Sciences	39	2,043	7%	588	86.0	608	83.4	580	86.6	3.81	0.44	3.21	0.56	0.91	0.28
Business, Management, and Marketing	36	4,540	16%	543	84.8	579	85.8	539	86.1	3.57	0.52	3.09	0.58	0.91	0.28
Communications/ Journalism	34	1,922	7%	556	87.5	551	86.9	554	84.5	3.56	0.50	3.11	0.55	0.93	0.25
Computer and Information Science	35	654	2%	595	89.7	635	80.6	571	89.1	3.63	0.47	2.97	0.65	0.90	0.30
Education	27	1,733	6%	523	84.6	533	85.3	520	83.9	3.55	0.48	3.18	0.56	0.89	0.31
Engineering/ Architecture	30	3,883	14%	596	80.8	657	72.6	579	81.8	3.81	0.42	3.09	0.60	0.95	0.22
Foreign Languages, Literatures, and Linguistics	30	394	1%	623	91.0	606	87.0	615	93.6	3.77	0.46	3.36	0.53	0.92	0.27
Health Professions and Related Clinical Sciences	30	1,823	6%	542	79.1	562	79.8	543	77.5	3.71	0.45	3.21	0.51	0.90	0.30
Humanities and Liberal Arts	39	3,954	14%	590	91.8	571	87.2	579	89.2	3.61	0.49	3.21	0.54	0.92	0.28
Mathematics and Statistics/Physical Sciences	35	936	3%	602	90.0	643	86.3	585	88.8	3.80	0.44	3.18	0.59	0.94	0.25
Security and Protective Services	18	487	2%	506	78.9	520	79.9	500	80.6	3.28	0.50	2.87	0.63	0.89	0.32
Social Sciences	39	3,700	13%	591	92.8	585	92.2	582	91.5	3.64	0.47	3.17	0.55	0.92	0.27
Social Services and Public Administration	18	199	1%	541	87.9	526	88.6	531	88.4	3.51	0.51	3.10	0.54	0.93	0.26
Undeclared	30	1,505	5%	547	100.9	560	101.7	540	98.8	3.45	0.54	2.76	0.65	0.70	0.46
Total	39	28,202	100%	570	91.6	587	93.0	562	89.8	3.64	0.49	3.12	0.58	0.91	0.29

Note: Cells with fewer than 15 students are not reported (n/r).

Table 6.

Descriptive Statistics of Academic Measures by Major Category and Parental Education Level

				Less Than a Bachelor's Degree											
				SAT-CR		SAT-M		SAT-W		HSGPA		cGPA		Retention to Year 3	
Major Category	*k*	*n*	%	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Agriculture/Natural Resources	17	133	1%	538	81.4	552	76.2	518	75.4	3.59	0.55	2.93	0.54	0.93	0.26
Biological and Biomedical Sciences	38	911	8%	541	85.5	567	85.9	531	86.7	3.77	0.46	2.99	0.62	0.88	0.33
Business, Management, and Marketing	35	1,849	17%	505	81.8	543	86.9	502	81.5	3.53	0.53	2.93	0.61	0.89	0.31
Communications/ Journalism	32	705	6%	524	88.5	520	86.1	524	88.4	3.54	0.53	2.99	0.59	0.92	0.28
Computer and Information Science	27	252	2%	560	97.6	607	87.4	538	91.7	3.63	0.49	2.91	0.66	0.89	0.31
Education	26	781	7%	497	78.1	506	79.9	493	79.0	3.50	0.52	3.05	0.61	0.88	0.33
Engineering/ Architecture	30	1,119	10%	560	83.7	627	80.3	545	83.8	3.75	0.46	2.96	0.60	0.93	0.25
Foreign Languages, Literatures, and Linguistics	23	160	1%	568	97.7	562	92.1	567	96.0	3.74	0.49	3.12	0.62	0.89	0.31
Health Professions and Related Clinical Sciences	28	790	7%	507	79.2	530	83.7	509	76.6	3.66	0.46	3.06	0.59	0.86	0.35
Humanities and Liberal Arts	39	1,275	12%	553	91.0	532	84.1	539	84.9	3.56	0.50	3.05	0.58	0.90	0.29
Mathematics and Statistics/Physical Sciences	33	344	3%	548	91.5	601	91.5	542	92.1	3.73	0.49	2.96	0.63	0.90	0.31
Security and Protective Services	18	308	3%	488	78.9	504	81.4	482	77.2	3.30	0.51	2.83	0.64	0.88	0.32
Social Sciences	39	1,441	13%	538	86.9	534	91.0	528	84.7	3.62	0.50	2.98	0.59	0.90	0.30
Social Services and Public Administration	15	101	1%	506	87.6	497	83.2	493	88.3	3.48	0.51	2.85	0.59	0.83	0.37
Undeclared	26	705	6%	498	87.3	512	91.1	491	87.0	3.39	0.57	2.56	0.64	0.68	0.47
Total	39	10,874	100%	527	88.6	546	92.9	520	86.3	3.59	0.52	2.96	0.62	0.88	0.32

Table 6. *(continued)*

Descriptive Statistics of Academic Measures by Major Category and Parental Education Level

				Bachelor's Degree											
				SAT-CR		SAT-M		SAT-W		HSGPA		cGPA		Retention to Year 3	
Major Category	*k*	*n*	%	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Agriculture/Natural Resources	19	155	1%	567	82.8	574	75.2	543	77.0	3.61	0.46	3.02	0.56	0.93	0.26
Biological and Biomedical Sciences	39	847	7%	579	85.9	605	82.5	572	83.6	3.81	0.44	3.18	0.56	0.88	0.33
Business, Management, and Marketing	35	1,947	17%	546	84.6	581	87.8	541	85.7	3.59	0.50	3.10	0.58	0.89	0.31
Communications/ Journalism	34	812	7%	555	83.3	550	83.5	553	79.0	3.58	0.50	3.11	0.52	0.92	0.28
Computer and Information Science	30	260	2%	588	88.0	632	82.1	559	93.6	3.60	0.48	2.92	0.63	0.89	0.31
Education	26	622	5%	531	81.6	540	84.9	529	78.9	3.57	0.48	3.18	0.56	0.88	0.33
Engineering/ Architecture	27	1,724	15%	590	81.3	657	74.0	576	82.4	3.81	0.41	3.07	0.58	0.93	0.25
Foreign Languages, Literatures, and Linguistics	25	164	1%	594	94.8	584	91.2	585	96.7	3.76	0.47	3.30	0.53	0.89	0.31
Health Professions and Related Clinical Sciences	28	775	7%	542	80.9	565	78.6	543	78.6	3.71	0.45	3.21	0.50	0.86	0.35
Humanities and Liberal Arts	38	1,526	13%	585	90.0	570	84.5	574	85.9	3.62	0.49	3.21	0.53	0.90	0.29
Mathematics and Statistics/Physical Sciences	35	348	3%	598	85.4	642	81.0	577	82.4	3.79	0.44	3.16	0.56	0.90	0.31
Security and Protective Services	17	163	1%	514	79.4	528	86.0	504	83.9	3.31	0.50	2.89	0.65	0.88	0.32
Social Sciences	38	1,436	13%	583	91.3	579	90.7	574	91.0	3.64	0.48	3.13	0.56	0.94	0.24
Social Services and Public Administration	17	75	1%	543	79.8	533	74.7	529	91.7	3.56	0.48	3.08	0.61	0.92	0.27
Undeclared	30	576	5%	543	99.5	565	98.8	533	94.9	3.47	0.52	2.73	0.65	0.66	0.48
Total	39	11,430	100%	567	89.0	588	91.7	559	87.1	3.66	0.49	3.11	0.57	0.91	0.28

Table 6. *(continued)*

Descriptive Statistics of Academic Measures by Major Category and Parental Education Level

				More Than a Bachelor's Degree											
				SAT-CR		SAT-M		SAT-W		HSGPA		cGPA		Retention to Year 3	
Major Category	*k*	*n*	%	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Agriculture/Natural Resources	19	206	1%	579	78.1	576	76.4	569	79.4	3.64	0.51	3.10	0.59	0.93	0.25
Biological and Biomedical Sciences	37	1,402	9%	609	88.0	635	87.2	604	88.4	3.82	0.43	3.27	0.54	0.93	0.25
Business, Management, and Marketing	36	2,178	14%	565	87.5	601	88.3	561	87.1	3.60	0.52	3.16	0.55	0.92	0.27
Communications/ Journalism	35	987	6%	574	86.5	567	87.6	571	84.6	3.61	0.50	3.18	0.51	0.95	0.22
Computer and Information Science	29	321	2%	608	92.3	652	89.1	592	91.3	3.63	0.46	3.00	0.65	0.91	0.29
Education	25	635	4%	544	89.4	553	87.3	541	87.7	3.59	0.48	3.25	0.51	0.90	0.30
Engineering/ Architecture	28	2,406	16%	610	82.0	671	70.9	596	82.0	3.81	0.42	3.14	0.59	0.96	0.20
Foreign Languages, Literatures, and Linguistics	28	247	2%	638	87.8	616	84.2	633	88.4	3.77	0.43	3.41	0.48	0.95	0.22
Health Professions and Related Clinical Sciences	27	751	5%	558	82.2	577	85.1	560	79.8	3.71	0.45	3.22	0.50	0.92	0.27
Humanities and Liberal Arts	37	2,232	15%	608	90.9	588	87.2	596	89.6	3.63	0.48	3.25	0.53	0.91	0.28
Mathematics and Statistics/Physical Sciences	34	562	4%	613	93.4	658	86.7	598	95.0	3.81	0.44	3.23	0.58	0.95	0.23
Security and Protective Services	18	127	1%	515	79.3	522	84.8	508	87.3	3.20	0.48	2.89	0.57	0.88	0.32
Social Sciences	38	2,376	16%	613	91.3	607	91.3	602	90.2	3.67	0.46	3.24	0.50	0.94	0.24
Social Services and Public Administration	17	85	1%	561	84.8	537	108.0	550	80.8	3.52	0.52	3.22	0.53	0.97	0.19
Undeclared	29	807	5%	574	97.5	591	100.9	570	97.9	3.51	0.53	2.85	0.64	0.74	0.44
Total	39	15,322	100%	593	91.5	610	93.4	585	90.2	3.68	0.48	3.19	0.56	0.92	0.27

Table 7.

Restriction-of-Range Corrected Correlations with Second-Year Cumulative GPA by Major Category

Major Category	*k*	*n*	SAT-CR	SAT-M	SAT-W	SAT*	HSGPA	SAT*, HSGPA
Agriculture/Natural Resources	11	474	0.56	0.56	0.57	0.61	0.58	0.68
Biological and Biomedical Sciences	37	3,317	0.55	0.59	0.58	0.63	0.58	0.70
Business, Management, and Marketing	35	6,253	0.51	0.53	0.54	0.58	0.57	0.66
Communications/ Journalism	30	2,593	0.52	0.51	0.54	0.57	0.57	0.65
Computer and Information Science	15	808	0.43	0.46	0.47	0.50	0.52	0.58
Education	23	2,109	0.53	0.50	0.58	0.59	0.56	0.66
Engineering/ Architecture	22	5,474	0.52	0.57	0.55	0.61	0.60	0.69
Foreign Languages, Literatures, and Linguistics	16	544	0.51	0.46	0.56	0.57	0.48	0.61
Health Professions and Related Clinical Sciences	24	2,393	0.54	0.55	0.59	0.62	0.58	0.68
Humanities and Liberal Arts	38	5,234	0.50	0.49	0.54	0.56	0.58	0.65
Mathematics and Statistics/Physical Sciences	29	1,269	0.55	0.59	0.56	0.63	0.61	0.71
Security and Protective Services	16	608	0.55	0.52	0.54	0.58	0.59	0.68
Social Sciences	37	5,518	0.52	0.51	0.55	0.58	0.56	0.65
Social Services and Public Administration	11	234	0.55	0.45	0.51	0.56	0.52	0.63
Undeclared	24	2,159	0.37	0.34	0.41	0.42	0.44	0.49
Total	39	39,440	0.51	0.50	0.55	0.57	0.57	0.66

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation.

Table 8.

Restriction-of-Range Corrected Correlations with Second-Year Cumulative GPA by Major Category and Gender

			Female					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	7	250	0.53	0.55	0.54	0.59	0.58	0.67
Biological and Biomedical Sciences	34	1,944	0.58	0.63	0.59	0.66	0.57	0.71
Business, Management, and Marketing	31	2,775	0.55	0.59	0.58	0.63	0.58	0.69
Communications/ Journalism	26	1,792	0.57	0.58	0.58	0.63	0.56	0.69
Computer and Information Science	3	48	0.17	0.16	0.28	0.30	0.37	0.42
Education	22	1,665	0.54	0.54	0.59	0.62	0.55	0.67
Engineering/ Architecture	14	1,183	0.56	0.62	0.57	0.65	0.54	0.69
Foreign Languages, Literatures, and Linguistics	10	348	0.51	0.45	0.57	0.57	0.42	0.59
Health Professions and Related Clinical Sciences	21	1,924	0.56	0.58	0.59	0.63	0.58	0.70
Humanities and Liberal Arts	37	3,165	0.55	0.56	0.57	0.61	0.59	0.69
Mathematics and Statistics/Physical Sciences	18	471	0.56	0.60	0.55	0.63	0.56	0.69
Security and Protective Services	10	245	0.54	0.55	0.51	0.59	0.59	0.68
Social Sciences	34	3,311	0.56	0.57	0.58	0.63	0.57	0.69
Social Services and Public Administration	8	184	0.55	0.48	0.53	0.57	0.57	0.66
Undeclared	19	1,000	0.44	0.44	0.48	0.50	0.49	0.57
Total	39	20,957	0.55	0.56	0.58	0.62	0.57	0.68

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a).

Table 8. *(continued)*

Restriction-of-Range Corrected Correlations with Second-Year Cumulative GPA by Major Category and Gender

			Male					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	7	186	0.52	0.54	0.51	0.58	0.55	0.65
Biological and Biomedical Sciences	30	1,323	0.49	0.53	0.53	0.57	0.54	0.64
Business, Management, and Marketing	34	3,455	0.48	0.50	0.50	0.54	0.53	0.61
Communications/ Journalism	21	732	0.40	0.40	0.40	0.43	0.49	0.53
Computer and Information Science	15	738	0.43	0.46	0.46	0.50	0.51	0.58
Education	14	407	0.48	0.42	0.50	0.52	0.53	0.60
Engineering/ Architecture	20	4,251	0.52	0.56	0.54	0.60	0.61	0.69
Foreign Languages, Literatures, and Linguistics	5	111	0.54	0.54	0.62	0.63	0.56	0.69
Health Professions and Related Clinical Sciences	9	396	0.49	0.50	0.54	0.57	0.51	0.62
Humanities and Liberal Arts	33	2,044	0.46	0.44	0.48	0.50	0.52	0.59
Mathematics and Statistics/Physical Sciences	19	671	0.55	0.60	0.56	0.63	0.61	0.71
Security and Protective Services	11	301	0.52	0.49	0.52	0.56	0.51	0.61
Social Sciences	30	2,161	0.47	0.44	0.49	0.51	0.51	0.59
Social Services and Public Administration	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Undeclared	18	1,093	0.34	0.32	0.37	0.38	0.37	0.43
Total	37	18,483	0.49	0.50	0.52	0.55	0.56	0.63

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a).

Table 9.

Restriction-of-Range Corrected Correlations with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			Asian, Asian American, or Pacific Islander					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Biological and Biomedical Sciences	12	517	0.50	0.58	0.55	0.61	0.49	0.64
Business, Management, and Marketing	14	537	0.41	0.43	0.41	0.46	0.43	0.51
Communications/ Journalism	3	89	0.58	0.62	0.62	0.67	0.63	0.75
Computer and Information Science	3	68	0.33	0.47	0.41	0.49	0.25	0.49
Education	2	40	n/r	n/r	n/r	n/r	n/r	n/r
Engineering/ Architecture	10	709	0.53	0.60	0.55	0.62	0.57	0.69
Foreign Languages, Literatures, and Linguistics	2	27	n/r	n/r	n/r	n/r	n/r	n/r
Health Professions and Related Clinical Sciences	4	120	0.55	0.59	0.58	0.63	0.56	0.68
Humanities and Liberal Arts	7	186	0.46	0.43	0.48	0.50	0.53	0.59
Mathematics and Statistics/Physical Sciences	4	86	0.37	0.51	0.37	0.51	0.48	0.58
Security and Protective Services	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Social Sciences	11	359	0.38	0.43	0.40	0.45	0.34	0.46
Social Services and Public Administration	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Undeclared	4	132	0.14	0.16	0.09	0.18	0.00	0.20
Total	27	3,524	0.48	0.51	0.49	0.54	0.51	0.60

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a). Cells with fewer than 15 students are not reported (n/r).

Table 9. *(continued)*

Restriction-of-Range Corrected Correlations with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			Black or African American					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Biological and Biomedical Sciences	4	92	0.40	0.47	0.48	0.52	0.44	0.56
Business, Management, and Marketing	12	270	0.30	0.34	0.32	0.36	0.39	0.43
Communications/ Journalism	5	79	0.72	0.50	0.60	0.72	0.52	0.76
Computer and Information Science	2	22	n/r	n/r	n/r	n/r	n/r	n/r
Education	1	14	n/r	n/r	n/r	n/r	n/r	n/r
Engineering/ Architecture	5	193	0.39	0.42	0.49	0.50	0.25	0.50
Foreign Languages, Literatures, and Linguistics	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Health Professions and Related Clinical Sciences	5	109	0.36	0.35	0.39	0.40	0.43	0.48
Humanities and Liberal Arts	3	87	0.59	0.64	0.70	0.73	0.64	0.79
Mathematics and Statistics/Physical Sciences	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Security and Protective Services	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Social Sciences	13	264	0.38	0.44	0.41	0.46	0.50	0.55
Social Services and Public Administration	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Undeclared	5	73	0.44	0.30	0.48	0.49	0.29	0.50
Total	27	1,884	0.44	0.42	0.48	0.49	0.43	0.53

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a). Cells with fewer than 15 students are not reported (n/r).

Table 9. *(continued)*

Restriction-of-Range Corrected Correlations with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			Hispanic, Latino, or Latin American					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Biological and Biomedical Sciences	7	161	0.60	0.61	0.59	0.66	0.52	0.69
Business, Management, and Marketing	9	301	0.47	0.43	0.49	0.51	0.48	0.57
Communications/ Journalism	4	126	0.50	0.51	0.47	0.55	0.49	0.60
Computer and Information Science	2	27	n/r	n/r	n/r	n/r	n/r	n/r
Education	3	83	0.30	0.37	0.39	0.42	0.50	0.53
Engineering/ Architecture	4	218	0.32	0.37	0.41	0.43	0.23	0.43
Foreign Languages, Literatures, and Linguistics	1	33	n/r	n/r	n/r	n/r	n/r	n/r
Health Professions and Related Clinical Sciences	3	94	0.54	0.56	0.61	0.64	0.59	0.70
Humanities and Liberal Arts	9	285	0.52	0.55	0.56	0.60	0.56	0.66
Mathematics and Statistics/Physical Sciences	1	32	n/r	n/r	n/r	n/r	n/r	n/r
Security and Protective Services	1	14	n/r	n/r	n/r	n/r	n/r	n/r
Social Sciences	13	430	0.46	0.51	0.52	0.55	0.51	0.61
Social Services and Public Administration	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Undeclared	4	146	0.20	0.15	0.30	0.32	0.21	0.34
Total	29	2,594	0.49	0.48	0.53	0.55	0.50	0.60

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a). Cells with fewer than 15 students are not reported (n/r).

Table 9. *(continued)*

Restriction-of-Range Corrected Correlations with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			White					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	8	378	0.54	0.55	0.57	0.61	0.61	0.70
Biological and Biomedical Sciences	34	2,009	0.56	0.59	0.59	0.64	0.62	0.72
Business, Management, and Marketing	34	4,528	0.51	0.51	0.54	0.57	0.59	0.66
Communications/ Journalism	29	1,904	0.49	0.49	0.51	0.55	0.59	0.65
Computer and Information Science	15	582	0.42	0.43	0.47	0.49	0.52	0.58
Education	22	1,716	0.52	0.48	0.57	0.58	0.55	0.65
Engineering/ Architecture	21	3,849	0.53	0.57	0.56	0.61	0.64	0.72
Foreign Languages, Literatures, and Linguistics	10	304	0.45	0.39	0.50	0.50	0.49	0.57
Health Professions and Related Clinical Sciences	22	1,789	0.54	0.53	0.58	0.61	0.59	0.69
Humanities and Liberal Arts	38	3,952	0.50	0.47	0.52	0.54	0.59	0.65
Mathematics and Statistics/Physical Sciences	26	881	0.56	0.60	0.58	0.64	0.66	0.74
Security and Protective Services	11	438	0.55	0.53	0.55	0.59	0.63	0.70
Social Sciences	35	3,682	0.51	0.49	0.55	0.57	0.59	0.66
Social Services and Public Administration	8	152	0.48	0.39	0.42	0.49	0.47	0.56
Undeclared	23	1,471	0.37	0.33	0.40	0.41	0.48	0.52
Total	39	28,202	0.50	0.49	0.54	0.56	0.60	0.67

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a). Cells with fewer than 15 students are not reported (n/r).

Table 10.

Restriction-of-Range Corrected Correlations with Second-Year Cumulative GPA by Major Category and Parental Education Level

			Less Than a Bachelor's Degree					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	5	95	0.38	0.51	0.45	0.53	0.51	0.60
Biological and Biomedical Sciences	28	861	0.54	0.58	0.55	0.62	0.56	0.68
Business, Management, and Marketing	31	1,826	0.50	0.48	0.52	0.55	0.55	0.63
Communications/ Journalism	19	636	0.45	0.41	0.47	0.49	0.45	0.54
Computer and Information Science	6	179	0.30	0.37	0.36	0.40	0.41	0.46
Education	18	753	0.44	0.40	0.51	0.51	0.51	0.59
Engineering/ Architecture	16	1,064	0.43	0.50	0.47	0.52	0.54	0.61
Foreign Languages, Literatures, and Linguistics	5	102	0.39	0.28	0.42	0.43	0.42	0.50
Health Professions and Related Clinical Sciences	17	751	0.51	0.53	0.56	0.59	0.54	0.65
Humanities and Liberal Arts	30	1,222	0.44	0.45	0.47	0.50	0.52	0.58
Mathematics and Statistics/Physical Sciences	13	258	0.50	0.55	0.50	0.57	0.51	0.63
Security and Protective Services	11	268	0.55	0.50	0.52	0.58	0.61	0.68
Social Sciences	32	1,408	0.49	0.48	0.50	0.53	0.50	0.60
Social Services and Public Administration	4	54	0.63	0.66	0.57	0.70	0.48	0.72
Undeclared	15	646	0.30	0.25	0.36	0.36	0.36	0.42
Total	39	10,874	0.48	0.48	0.51	0.54	0.54	0.62

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with fewer than 15 students are not reported (n/r).

Table 10. *(continued)*

Restriction-of-Range Corrected Correlations with Second-Year Cumulative GPA by Major Category and Parental Education Level

			Bachelor's Degree					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	6	126	0.57	0.51	0.56	0.60	0.59	0.69
Biological and Biomedical Sciences	22	765	0.56	0.60	0.60	0.65	0.60	0.72
Business, Management, and Marketing	30	1,921	0.47	0.50	0.50	0.54	0.57	0.64
Communications/ Journalism	19	751	0.49	0.49	0.50	0.54	0.59	0.65
Computer and Information Science	5	189	0.45	0.47	0.48	0.51	0.62	0.65
Education	15	580	0.57	0.56	0.60	0.63	0.61	0.71
Engineering/ Architecture	15	1,670	0.49	0.53	0.53	0.57	0.57	0.65
Foreign Languages, Literatures, and Linguistics	4	96	0.64	0.54	0.65	0.68	0.54	0.71
Health Professions and Related Clinical Sciences	16	723	0.53	0.50	0.56	0.58	0.50	0.63
Humanities and Liberal Arts	28	1,462	0.50	0.49	0.56	0.57	0.61	0.68
Mathematics and Statistics/Physical Sciences	10	244	0.52	0.57	0.52	0.59	0.58	0.67
Security and Protective Services	5	106	0.53	0.58	0.58	0.62	0.58	0.69
Social Sciences	32	1,414	0.48	0.47	0.51	0.53	0.54	0.62
Social Services and Public Administration	2	25	n/r	n/r	n/r	n/r	n/r	n/r
Undeclared	12	495	0.36	0.34	0.41	0.42	0.46	0.51
Total	38	11,421	0.50	0.49	0.53	0.56	0.59	0.66

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with fewer than 15 students are not reported (n/r).

Table 10. *(continued)*

Restriction-of-Range Corrected Correlations with Second-Year Cumulative GPA by Major Category and Parental Education Level

			More Than a Bachelor's Degree					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	6	159	0.58	0.57	0.59	0.63	0.66	0.74
Biological and Biomedical Sciences	28	1,356	0.50	0.54	0.55	0.58	0.55	0.65
Business, Management, and Marketing	29	2,143	0.49	0.53	0.52	0.57	0.57	0.65
Communications/ Journalism	20	919	0.52	0.51	0.54	0.57	0.61	0.67
Computer and Information Science	7	236	0.48	0.47	0.49	0.52	0.54	0.61
Education	16	595	0.52	0.46	0.56	0.57	0.52	0.63
Engineering/ Architecture	18	2,373	0.55	0.60	0.58	0.64	0.65	0.74
Foreign Languages, Literatures, and Linguistics	6	174	0.49	0.41	0.56	0.56	0.46	0.60
Health Professions and Related Clinical Sciences	17	714	0.56	0.56	0.60	0.63	0.63	0.72
Humanities and Liberal Arts	31	2,185	0.52	0.48	0.54	0.56	0.59	0.66
Mathematics and Statistics/Physical Sciences	16	482	0.52	0.60	0.56	0.63	0.61	0.71
Security and Protective Services	3	61	0.38	0.26	0.36	0.39	0.47	0.52
Social Sciences	28	2,329	0.54	0.51	0.58	0.60	0.60	0.69
Social Services and Public Administration	2	33	n/r	n/r	n/r	n/r	n/r	n/r
Undeclared	17	759	0.32	0.29	0.33	0.34	0.41	0.44
Total	39	15,322	0.52	0.51	0.55	0.58	0.60	0.67

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with fewer than 15 students are not reported (n/r).

Table 11.

Differential Prediction Analyses with Second-Year Cumulative GPA by Major Category

Major Category	*k*	*n*	SAT-CR	SAT-M	SAT-W	SAT*	HSGPA	SAT*, HSGPA
Agriculture/Natural Resources	24	514	-0.08	-0.05	-0.06	-0.07	-0.05	-0.07
Biological and Biomedical Sciences	39	3,329	0.02	0.01	0.01	0.00	-0.02	-0.03
Business, Management, and Marketing	36	6,259	0.03	0.00	0.03	0.03	0.02	0.04
Communications/ Journalism	35	2,616	0.02	0.07	0.01	0.04	0.04	0.05
Computer and Information Science	37	901	-0.12	-0.15	-0.11	-0.13	-0.07	-0.10
Education	27	2,126	0.17	0.17	0.16	0.17	0.11	0.15
Engineering/ Architecture	31	5,509	-0.04	-0.10	-0.03	-0.07	-0.05	-0.08
Foreign Languages, Literatures, and Linguistics	30	603	0.09	0.15	0.08	0.09	0.12	0.08
Health Professions and Related Clinical Sciences	30	2,417	0.11	0.10	0.09	0.11	0.03	0.08
Humanities and Liberal Arts	39	5,236	0.04	0.11	0.04	0.05	0.10	0.06
Mathematics and Statistics/Physical Sciences	35	1,310	-0.01	-0.07	0.00	-0.04	-0.03	-0.06
Security and Protective Services	18	623	-0.09	-0.10	-0.08	-0.07	-0.07	-0.04
Social Sciences	39	5,527	-0.01	0.03	-0.01	0.00	0.01	0.01
Social Services and Public Administration	20	271	0.03	0.08	0.04	0.07	0.03	0.08
Undeclared	30	2,199	-0.34	-0.34	-0.33	-0.31	-0.30	-0.27
Total	39	39,440	0.00	0.00	0.00	0.00	0.00	0.00

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation.

Table 12.

Differential Prediction Analyses with Second-Year Cumulative GPA by Major Category and Gender

			Female					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	22	293	0.03	0.07	0.02	0.03	0.01	-0.01
Biological and Biomedical Sciences	39	1,971	0.04	0.05	0.02	0.03	-0.02	-0.03
Business, Management, and Marketing	36	2,803	0.13	0.11	0.11	0.12	0.07	0.09
Communications/ Journalism	35	1,833	0.09	0.15	0.07	0.11	0.08	0.10
Computer and Information Science	18	80	-0.04	-0.04	-0.07	-0.07	-0.12	-0.12
Education	27	1,687	0.22	0.23	0.20	0.22	0.14	0.18
Engineering/ Architecture	28	1,226	0.06	0.03	0.04	0.03	0.01	-0.02
Foreign Languages, Literatures, and Linguistics	30	439	0.14	0.21	0.12	0.14	0.15	0.11
Health Professions and Related Clinical Sciences	30	1,959	0.15	0.15	0.13	0.15	0.06	0.10
Humanities and Liberal Arts	39	3,175	0.11	0.20	0.10	0.13	0.13	0.11
Mathematics and Statistics/Physical Sciences	35	572	0.06	0.03	0.05	0.03	-0.01	-0.03
Security and Protective Services	18	279	-0.01	0.01	-0.02	0.00	-0.04	0.00
Social Sciences	39	3,343	0.05	0.10	0.04	0.07	0.04	0.05
Social Services and Public Administration	19	243	0.02	0.08	0.03	0.07	0.01	0.06
Undeclared	29	1,054	-0.21	-0.19	-0.22	-0.18	-0.22	-0.17
Total	39	20,957	0.08	0.11	0.07	0.09	0.05	0.06

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation.

Table 12. *(continued)*

Differential Prediction Analyses with Second-Year Cumulative GPA by Major Category and Gender

			Male					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	20	221	-0.21	-0.21	-0.17	-0.19	-0.14	-0.15
Biological and Biomedical Sciences	37	1,358	-0.01	-0.05	0.00	-0.03	-0.02	-0.04
Business, Management, and Marketing	35	3,456	-0.04	-0.10	-0.03	-0.04	-0.02	-0.01
Communications/ Journalism	34	783	-0.15	-0.13	-0.14	-0.13	-0.06	-0.07
Computer and Information Science	35	821	-0.13	-0.16	-0.11	-0.14	-0.07	-0.10
Education	22	439	-0.01	-0.05	0.01	0.00	0.00	0.02
Engineering/ Architecture	30	4,283	-0.07	-0.14	-0.05	-0.09	-0.07	-0.09
Foreign Languages, Literatures, and Linguistics	22	164	-0.03	-0.01	-0.03	-0.04	0.04	0.00
Health Professions and Related Clinical Sciences	25	458	-0.06	-0.11	-0.04	-0.05	-0.10	-0.05
Humanities and Liberal Arts	37	2,061	-0.07	-0.03	-0.05	-0.06	0.04	-0.01
Mathematics and Statistics/Physical Sciences	33	738	-0.07	-0.14	-0.04	-0.10	-0.05	-0.09
Security and Protective Services	18	344	-0.16	-0.19	-0.12	-0.13	-0.10	-0.07
Social Sciences	36	2,184	-0.10	-0.09	-0.08	-0.09	-0.03	-0.05
Social Services and Public Administration	9	28	0.05	0.08	0.14	0.12	0.19	0.21
Undeclared	29	1,145	-0.45	-0.48	-0.42	-0.43	-0.39	-0.36
Total	37	18,483	-0.09	-0.13	-0.08	-0.10	-0.06	-0.07

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation.

Table 13.

Differential Prediction Analyses with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			Asian, Asian American, or Pacific Islander					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	10	12	n/r	n/r	n/r	n/r	n/r	n/r
Biological and Biomedical Sciences	32	600	0.09	0.02	0.07	0.05	0.06	0.03
Business, Management, and Marketing	28	586	0.12	0.04	0.11	0.09	0.12	0.11
Communications/ Journalism	21	156	0.05	0.06	0.05	0.06	0.05	0.07
Computer and Information Science	18	98	-0.04	-0.17	-0.03	-0.08	-0.02	-0.04
Education	16	75	0.14	0.07	0.11	0.12	0.06	0.11
Engineering/ Architecture	22	754	0.05	-0.06	0.03	-0.01	0.04	0.00
Foreign Languages, Literatures, and Linguistics	12	49	0.04	-0.02	0.00	0.00	0.06	0.05
Health Professions and Related Clinical Sciences	20	169	0.12	0.02	0.09	0.09	0.05	0.09
Humanities and Liberal Arts	30	273	0.08	0.07	0.08	0.07	0.09	0.07
Mathematics and Statistics/Physical Sciences	22	156	-0.03	-0.18	-0.03	-0.07	-0.10	-0.07
Security and Protective Services	5	17	0.11	0.02	0.13	0.10	0.00	0.06
Social Sciences	30	441	0.01	-0.02	0.00	0.00	0.01	0.02
Social Services and Public Administration	5	15	0.08	0.11	0.13	0.15	0.03	0.14
Undeclared	18	183	-0.36	-0.42	-0.34	-0.35	-0.37	-0.32
Total	38	3,584	0.04	-0.03	0.03	0.01	0.03	0.02

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with fewer than 15 students are not reported (n/r).

Table 13. *(continued)*

Differential Prediction Analyses with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			Black or African American					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	6	16	-0.09	-0.07	-0.10	-0.06	-0.04	0.01
Biological and Biomedical Sciences	30	192	-0.25	-0.25	-0.24	-0.20	-0.35	-0.23
Business, Management, and Marketing	27	330	-0.21	-0.20	-0.18	-0.14	-0.24	-0.12
Communications/ Journalism	28	145	-0.13	-0.06	-0.10	-0.05	-0.12	0.00
Computer and Information Science	14	44	-0.30	-0.27	-0.28	-0.22	-0.31	-0.19
Education	14	60	-0.12	-0.11	-0.10	-0.04	-0.17	0.02
Engineering/ Architecture	16	231	-0.34	-0.36	-0.32	-0.30	-0.33	-0.26
Foreign Languages, Literatures, and Linguistics	7	12	n/r	n/r	n/r	n/r	n/r	n/r
Health Professions and Related Clinical Sciences	17	142	-0.18	-0.17	-0.17	-0.10	-0.30	-0.11
Humanities and Liberal Arts	32	204	-0.19	-0.12	-0.17	-0.12	-0.19	-0.09
Mathematics and Statistics/Physical Sciences	19	49	-0.40	-0.40	-0.36	-0.34	-0.39	-0.27
Security and Protective Services	11	37	-0.24	-0.24	-0.22	-0.17	-0.29	-0.15
Social Sciences	33	339	-0.17	-0.12	-0.15	-0.10	-0.20	-0.08
Social Services and Public Administration	12	22	-0.26	-0.21	-0.18	-0.13	-0.37	-0.16
Undeclared	20	122	-0.54	-0.53	-0.52	-0.46	-0.52	-0.35
Total	37	1,945	-0.24	-0.21	-0.21	-0.17	-0.27	-0.14

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with fewer than 15 students are not reported (n/r).

Table 13. *(continued)*

Differential Prediction Analyses with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			Hispanic, Latino, or Latin American					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	6	9	n/r	n/r	n/r	n/r	n/r	n/r
Biological and Biomedical Sciences	28	227	-0.15	-0.15	-0.12	-0.11	-0.23	-0.14
Business, Management, and Marketing	32	378	-0.05	-0.08	-0.05	-0.02	-0.13	-0.03
Communications/ Journalism	26	189	0.02	0.05	0.01	0.05	-0.09	0.02
Computer and Information Science	10	49	-0.20	-0.22	-0.19	-0.19	-0.21	-0.15
Education	16	115	-0.03	0.01	-0.01	0.02	-0.11	0.02
Engineering/ Architecture	20	269	-0.03	-0.08	-0.02	-0.02	-0.10	-0.04
Foreign Languages, Literatures, and Linguistics	18	74	-0.07	-0.02	-0.08	-0.02	-0.16	-0.03
Health Professions and Related Clinical Sciences	20	143	0.02	0.00	-0.01	0.05	-0.17	0.02
Humanities and Liberal Arts	30	358	-0.06	0.01	-0.05	-0.01	-0.06	0.00
Mathematics and Statistics/Physical Sciences	19	65	-0.13	-0.21	-0.09	-0.11	-0.22	-0.14
Security and Protective Services	10	42	0.01	-0.02	0.02	0.02	-0.09	-0.01
Social Sciences	34	508	-0.09	-0.05	-0.06	-0.03	-0.14	-0.03
Social Services and Public Administration	7	18	-0.30	-0.22	-0.29	-0.21	-0.37	-0.18
Undeclared	18	195	-0.40	-0.41	-0.36	-0.34	-0.48	-0.32
Total	39	2,639	-0.09	-0.08	-0.08	-0.05	-0.16	-0.06

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with fewer than 15 students are not reported (n/r).

Table 13. *(continued)*

Differential Prediction Analyses with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			White					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	23	429	-0.06	-0.04	-0.05	-0.05	-0.05	-0.06
Biological and Biomedical Sciences	39	2,043	0.05	0.05	0.04	0.02	0.01	-0.02
Business, Management, and Marketing	36	4,540	0.05	0.01	0.05	0.04	0.04	0.05
Communications/ Journalism	34	1,922	0.03	0.07	0.01	0.04	0.06	0.05
Computer and Information Science	35	654	-0.12	-0.14	-0.10	-0.13	-0.06	-0.11
Education	27	1,733	0.20	0.20	0.19	0.20	0.15	0.17
Engineering/ Architecture	30	3,883	-0.04	-0.09	-0.03	-0.06	-0.05	-0.08
Foreign Languages, Literatures, and Linguistics	30	394	0.11	0.18	0.10	0.10	0.17	0.09
Health Professions and Related Clinical Sciences	30	1,823	0.14	0.14	0.13	0.14	0.07	0.10
Humanities and Liberal Arts	39	3,954	0.06	0.13	0.06	0.07	0.13	0.08
Mathematics and Statistics/Physical Sciences	35	936	0.02	-0.02	0.03	-0.01	0.01	-0.04
Security and Protective Services	18	487	-0.09	-0.10	-0.08	-0.08	-0.06	-0.04
Social Sciences	39	3,700	0.01	0.05	0.01	0.01	0.05	0.02
Social Services and Public Administration	18	199	0.09	0.14	0.09	0.12	0.10	0.12
Undeclared	30	1,505	-0.30	-0.30	-0.30	-0.29	-0.25	-0.25
Total	39	28,202	0.02	0.03	0.02	0.02	0.03	0.01

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with fewer than 15 students are not reported (n/r).

Table 14.

Differential Prediction Analyses with Second-Year Cumulative GPA by Major Category and Parental Education Level

			Less Than a Bachelor's Degree					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	17	133	-0.11	-0.11	-0.08	-0.09	-0.13	-0.10
Biological and Biomedical Sciences	38	911	-0.05	-0.07	-0.04	-0.05	-0.16	-0.11
Business, Management, and Marketing	35	1,849	-0.02	-0.08	-0.02	-0.02	-0.10	-0.03
Communications/ Journalism	32	705	-0.01	0.03	-0.02	0.01	-0.04	0.01
Computer and Information Science	27	252	-0.11	-0.14	-0.08	-0.10	-0.12	-0.10
Education	26	781	0.14	0.14	0.14	0.16	0.05	0.12
Engineering/ Architecture	30	1,119	-0.09	-0.16	-0.08	-0.10	-0.15	-0.13
Foreign Languages, Literatures, and Linguistics	23	160	-0.01	0.03	-0.02	0.00	-0.04	-0.01
Health Professions and Related Clinical Sciences	28	790	0.07	0.05	0.05	0.08	-0.07	0.03
Humanities and Liberal Arts	39	1,275	-0.01	0.06	0.00	0.02	0.00	0.02
Mathematics and Statistics/Physical Sciences	33	344	-0.10	-0.17	-0.10	-0.12	-0.18	-0.16
Security and Protective Services	18	308	-0.09	-0.11	-0.08	-0.07	-0.11	-0.06
Social Sciences	39	1,441	-0.07	-0.03	-0.05	-0.03	-0.11	-0.04
Social Services and Public Administration	15	101	-0.09	-0.05	-0.07	-0.03	-0.13	-0.03
Undeclared	26	705	-0.38	-0.39	-0.37	-0.34	-0.41	-0.31
Total	39	10,874	-0.05	-0.06	-0.04	-0.03	-0.10	-0.05

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation.

Table 14. *(continued)*

Differential Prediction Analyses with Second-Year Cumulative GPA by Major Category and Parental Education Level

			Bachelor's Degree					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	19	155	-0.08	-0.06	-0.05	-0.07	-0.05	-0.06
Biological and Biomedical Sciences	39	847	0.04	0.03	0.03	0.02	0.00	-0.02
Business, Management, and Marketing	35	1,947	0.06	0.02	0.06	0.05	0.05	0.06
Communications/ Journalism	34	812	0.02	0.07	0.01	0.04	0.05	0.05
Computer and Information Science	30	260	-0.16	-0.18	-0.12	-0.15	-0.08	-0.11
Education	26	622	0.18	0.18	0.16	0.18	0.13	0.15
Engineering/ Architecture	27	1,724	-0.05	-0.11	-0.04	-0.08	-0.07	-0.09
Foreign Languages, Literatures, and Linguistics	25	164	0.13	0.17	0.13	0.13	0.14	0.11
Health Professions and Related Clinical Sciences	28	775	0.14	0.14	0.13	0.14	0.07	0.10
Humanities and Liberal Arts	38	1,526	0.07	0.13	0.07	0.08	0.12	0.09
Mathematics and Statistics/Physical Sciences	35	348	0.00	-0.05	0.02	-0.03	0.00	-0.04
Security and Protective Services	17	163	-0.10	-0.10	-0.08	-0.08	-0.06	-0.04
Social Sciences	38	1,436	-0.02	0.02	-0.02	0.00	0.02	0.01
Social Services and Public Administration	17	75	0.05	0.09	0.06	0.08	0.06	0.08
Undeclared	30	576	-0.33	-0.34	-0.31	-0.31	-0.29	-0.26
Total	39	11,430	0.01	0.01	0.01	0.01	0.02	0.01

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation.

Table 14. *(continued)*

Differential Prediction Analyses with Second-Year Cumulative GPA by Major Category and Parental Education Level

			More Than a Bachelor's Degree					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	19	206	-0.04	0.01	-0.04	-0.04	0.01	-0.03
Biological and Biomedical Sciences	37	1,402	0.05	0.05	0.04	0.02	0.06	0.00
Business, Management, and Marketing	36	2,178	0.06	0.03	0.05	0.04	0.09	0.07
Communications/ Journalism	35	987	0.04	0.10	0.03	0.05	0.09	0.07
Computer and Information Science	29	321	-0.12	-0.15	-0.13	-0.16	-0.04	-0.11
Education	25	635	0.20	0.21	0.19	0.20	0.18	0.19
Engineering/ Architecture	28	2,406	-0.01	-0.06	-0.01	-0.04	0.01	-0.04
Foreign Languages, Literatures, and Linguistics	28	247	0.13	0.20	0.10	0.11	0.21	0.12
Health Professions and Related Clinical Sciences	27	751	0.12	0.12	0.09	0.11	0.08	0.09
Humanities and Liberal Arts	37	2,232	0.05	0.12	0.05	0.06	0.14	0.08
Mathematics and Statistics/Physical Sciences	34	562	0.02	-0.02	0.03	-0.01	0.04	-0.02
Security and Protective Services	18	127	-0.08	-0.06	-0.06	-0.06	0.02	0.01
Social Sciences	38	2,376	0.02	0.06	0.02	0.02	0.08	0.05
Social Services and Public Administration	17	85	0.15	0.23	0.15	0.19	0.20	0.20
Undeclared	29	807	-0.30	-0.30	-0.30	-0.30	-0.22	-0.24
Total	39	15,322	0.02	0.03	0.02	0.01	0.06	0.03

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation.

Appendix A

Table A1.

Raw Correlations with Second-Year Cumulative GPA by Major Category

Major Category	*k*	*n*	SAT-CR	SAT-M	SAT-W	SAT*	HSGPA	SAT*, HSGPA
Agriculture/Natural Resources	11	474	0.35	0.32	0.37	0.41	0.43	0.53
Biological and Biomedical Sciences	37	3,317	0.33	0.39	0.38	0.44	0.34	0.51
Business, Management, and Marketing	35	6,253	0.28	0.29	0.33	0.36	0.37	0.47
Communications/ Journalism	30	2,593	0.33	0.29	0.34	0.37	0.38	0.48
Computer and Information Science	15	808	0.24	0.27	0.30	0.33	0.35	0.43
Education	23	2,109	0.35	0.30	0.40	0.42	0.38	0.50
Engineering/ Architecture	22	5,474	0.27	0.31	0.32	0.37	0.37	0.47
Foreign Languages, Literatures, and Linguistics	16	544	0.36	0.32	0.42	0.43	0.32	0.49
Health Professions and Related Clinical Sciences	24	2,393	0.37	0.35	0.41	0.44	0.37	0.51
Humanities and Liberal Arts	38	5,234	0.33	0.28	0.37	0.39	0.41	0.50
Mathematics and Statistics/Physical Sciences	29	1,269	0.34	0.39	0.35	0.44	0.41	0.53
Security and Protective Services	16	608	0.36	0.29	0.35	0.39	0.44	0.52
Social Sciences	37	5,518	0.32	0.28	0.36	0.38	0.35	0.47
Social Services and Public Administration	11	234	0.41	0.31	0.34	0.43	0.33	0.50
Undeclared	24	2,159	0.24	0.20	0.28	0.29	0.31	0.38
Total	39	39,440	0.32	0.29	0.36	0.39	0.39	0.49

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation.

Appendix B

Table B1.

Raw Correlations with Second-Year Cumulative GPA by Major Category and Gender

			Female					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	7	250	0.34	0.32	0.34	0.39	0.40	0.51
Biological and Biomedical Sciences	34	1,944	0.39	0.45	0.41	0.49	0.34	0.54
Business, Management, and Marketing	31	2,775	0.33	0.37	0.35	0.42	0.36	0.50
Communications/ Journalism	26	1,792	0.38	0.38	0.38	0.44	0.34	0.50
Computer and Information Science	3	48	0.03	0.03	0.13	0.20	0.18	0.28
Education	22	1,665	0.35	0.35	0.40	0.44	0.37	0.50
Engineering/ Architecture	14	1,183	0.33	0.39	0.33	0.43	0.31	0.47
Foreign Languages, Literatures, and Linguistics	10	348	0.38	0.31	0.42	0.44	0.24	0.47
Health Professions and Related Clinical Sciences	21	1,924	0.38	0.38	0.40	0.45	0.36	0.51
Humanities and Liberal Arts	37	3,165	0.37	0.36	0.39	0.44	0.41	0.52
Mathematics and Statistics/Physical Sciences	18	471	0.37	0.44	0.37	0.48	0.39	0.53
Security and Protective Services	10	245	0.38	0.36	0.32	0.42	0.47	0.56
Social Sciences	34	3,311	0.37	0.37	0.39	0.44	0.35	0.50
Social Services and Public Administration	8	184	0.41	0.34	0.35	0.44	0.37	0.51
Undeclared	19	1,000	0.30	0.31	0.34	0.37	0.34	0.44
Total	39	20,957	0.37	0.38	0.39	0.45	0.37	0.51

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a).

Table B1. *(continued)*

Raw Correlations with Second-Year Cumulative GPA by Major Category and Gender

			Male					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	7	186	0.25	0.33	0.29	0.36	0.35	0.47
Biological and Biomedical Sciences	30	1,323	0.25	0.33	0.34	0.38	0.33	0.46
Business, Management, and Marketing	34	3,455	0.26	0.27	0.29	0.33	0.34	0.43
Communications/ Journalism	21	732	0.24	0.23	0.23	0.27	0.36	0.41
Computer and Information Science	15	738	0.24	0.27	0.29	0.33	0.36	0.43
Education	14	407	0.32	0.25	0.33	0.36	0.34	0.44
Engineering/ Architecture	20	4,251	0.25	0.31	0.30	0.36	0.38	0.47
Foreign Languages, Literatures, and Linguistics	5	111	0.40	0.41	0.50	0.53	0.40	0.58
Health Professions and Related Clinical Sciences	9	396	0.34	0.35	0.40	0.42	0.32	0.46
Humanities and Liberal Arts	33	2,044	0.29	0.26	0.32	0.35	0.37	0.45
Mathematics and Statistics/Physical Sciences	19	671	0.33	0.41	0.34	0.44	0.42	0.54
Security and Protective Services	11	301	0.35	0.31	0.37	0.40	0.39	0.49
Social Sciences	30	2,161	0.28	0.24	0.31	0.33	0.32	0.42
Social Services and Public Administration	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Undeclared	18	1,093	0.22	0.20	0.25	0.26	0.24	0.32
Total	37	18,483	0.29	0.30	0.33	0.36	0.37	0.46

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a).

Appendix C

Table C1.

Raw Correlations with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			Asian, Asian American, or Pacific Islander					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Biological and Biomedical Sciences	12	517	0.30	0.39	0.37	0.43	0.19	0.46
Business, Management, and Marketing	14	537	0.28	0.28	0.27	0.32	0.24	0.38
Communications/ Journalism	3	89	0.36	0.45	0.45	0.50	0.36	0.57
Computer and Information Science	3	68	0.17	0.35	0.24	0.37	0.22	0.39
Education	2	40	n/r	n/r	n/r	n/r	n/r	n/r
Engineering/ Architecture	10	709	0.26	0.33	0.28	0.37	0.33	0.46
Foreign Languages, Literatures, and Linguistics	2	27	n/r	n/r	n/r	n/r	n/r	n/r
Health Professions and Related Clinical Sciences	4	120	0.41	0.40	0.43	0.48	0.26	0.52
Humanities and Liberal Arts	7	186	0.26	0.19	0.22	0.28	0.32	0.39
Mathematics and Statistics/Physical Sciences	4	86	0.07	0.32	0.05	0.34	0.25	0.43
Security and Protective Services	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Social Sciences	11	359	0.26	0.30	0.27	0.33	0.18	0.35
Social Services and Public Administration	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Undeclared	4	132	0.13	0.18	0.10	0.19	0.00	0.19
Total	27	3,524	0.27	0.30	0.30	0.35	0.28	0.42

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a). Cells with fewer than 15 students are not reported (n/r).

Table C1. *(continued)*

Raw Correlations with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			Black or African American					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Biological and Biomedical Sciences	4	92	0.14	0.27	0.33	0.35	0.21	0.39
Business, Management, and Marketing	12	270	0.13	0.20	0.17	0.22	0.26	0.32
Communications/ Journalism	5	79	0.55	0.32	0.42	0.56	0.29	0.59
Computer and Information Science	2	22	n/r	n/r	n/r	n/r	n/r	n/r
Education	1	14	n/r	n/r	n/r	n/r	n/r	n/r
Engineering/ Architecture	5	193	0.21	0.18	0.35	0.36	0.04	0.36
Foreign Languages, Literatures, and Linguistics	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Health Professions and Related Clinical Sciences	5	109	0.17	0.16	0.25	0.26	0.27	0.34
Humanities and Liberal Arts	3	87	0.31	0.46	0.54	0.59	0.38	0.64
Mathematics and Statistics/Physical Sciences	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Security and Protective Services	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Social Sciences	13	264	0.20	0.24	0.17	0.26	0.32	0.39
Social Services and Public Administration	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Undeclared	5	73	0.31	0.15	0.35	0.37	0.18	0.39
Total	27	1,884	0.25	0.21	0.30	0.32	0.26	0.38

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a). Cells with fewer than 15 students are not reported (n/r).

Table C1. *(continued)*

Raw Correlations with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			Hispanic, Latino, or Latin American					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Biological and Biomedical Sciences	7	161	0.39	0.45	0.38	0.49	0.37	0.54
Business, Management, and Marketing	9	301	0.29	0.21	0.33	0.35	0.31	0.42
Communications/ Journalism	4	126	0.34	0.27	0.30	0.36	0.21	0.40
Computer and Information Science	2	27	n/r	n/r	n/r	n/r	n/r	n/r
Education	3	83	0.11	0.12	0.16	0.17	0.31	0.35
Engineering/ Architecture	4	218	0.18	0.27	0.33	0.36	0.15	0.37
Foreign Languages, Literatures, and Linguistics	1	33	n/r	n/r	n/r	n/r	n/r	n/r
Health Professions and Related Clinical Sciences	3	94	0.34	0.30	0.41	0.43	0.23	0.48
Humanities and Liberal Arts	9	285	0.27	0.28	0.34	0.37	0.30	0.44
Mathematics and Statistics/Physical Sciences	1	32	n/r	n/r	n/r	n/r	n/r	n/r
Security and Protective Services	1	14	n/r	n/r	n/r	n/r	n/r	n/r
Social Sciences	13	430	0.28	0.30	0.35	0.37	0.28	0.42
Social Services and Public Administration	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Undeclared	4	146	0.11	0.04	0.22	0.25	0.13	0.26
Total	29	2,594	0.29	0.26	0.34	0.36	0.29	0.42

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a). Cells with fewer than 15 students are not reported (n/r).

Table C1. *(continued)*

Raw Correlations with Second-Year Cumulative GPA by Major Category and Race/Ethnicity

			White					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	8	378	0.30	0.32	0.36	0.40	0.44	0.53
Biological and Biomedical Sciences	34	2,009	0.30	0.36	0.36	0.41	0.39	0.51
Business, Management, and Marketing	34	4,528	0.27	0.25	0.32	0.34	0.39	0.47
Communications/ Journalism	29	1,904	0.29	0.27	0.31	0.34	0.41	0.48
Computer and Information Science	15	582	0.20	0.21	0.28	0.30	0.36	0.42
Education	22	1,716	0.33	0.27	0.38	0.40	0.38	0.48
Engineering/ Architecture	21	3,849	0.27	0.30	0.31	0.36	0.41	0.49
Foreign Languages, Literatures, and Linguistics	10	304	0.33	0.26	0.39	0.40	0.39	0.49
Health Professions and Related Clinical Sciences	22	1,789	0.33	0.30	0.37	0.40	0.37	0.49
Humanities and Liberal Arts	38	3,952	0.31	0.25	0.35	0.37	0.42	0.49
Mathematics and Statistics/Physical Sciences	26	881	0.32	0.36	0.35	0.42	0.44	0.54
Security and Protective Services	11	438	0.37	0.30	0.36	0.41	0.48	0.55
Social Sciences	35	3,682	0.28	0.22	0.32	0.34	0.37	0.46
Social Services and Public Administration	8	152	0.33	0.26	0.22	0.36	0.31	0.43
Undeclared	23	1,471	0.22	0.16	0.26	0.27	0.34	0.40
Total	39	28,202	0.30	0.25	0.34	0.36	0.41	0.48

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with no students are noted as not applicable (n/a). Cells with fewer than 15 students are not reported (n/r).

Appendix D

Table D1.

Raw Correlations with Second-Year Cumulative GPA by Major Category and Parental Education Level

			Less Than a Bachelor's Degree					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	5	95	0.09	0.33	0.31	0.41	0.42	0.51
Biological and Biomedical Sciences	28	861	0.34	0.40	0.36	0.44	0.36	0.51
Business, Management, and Marketing	31	1,826	0.27	0.24	0.32	0.34	0.37	0.45
Communications/ Journalism	19	636	0.33	0.27	0.34	0.37	0.34	0.45
Computer and Information Science	6	179	0.13	0.25	0.22	0.30	0.28	0.36
Education	18	753	0.27	0.23	0.36	0.36	0.38	0.46
Engineering/ Architecture	16	1,064	0.20	0.30	0.27	0.33	0.37	0.44
Foreign Languages, Literatures, and Linguistics	5	102	0.28	0.22	0.30	0.30	0.30	0.39
Health Professions and Related Clinical Sciences	17	751	0.31	0.34	0.38	0.41	0.35	0.48
Humanities and Liberal Arts	30	1,222	0.25	0.27	0.31	0.34	0.37	0.45
Mathematics and Statistics/Physical Sciences	13	258	0.32	0.39	0.34	0.42	0.37	0.50
Security and Protective Services	11	268	0.35	0.27	0.33	0.38	0.50	0.55
Social Sciences	32	1,408	0.32	0.31	0.34	0.38	0.34	0.45
Social Services and Public Administration	4	54	0.48	0.46	0.32	0.55	0.19	0.57
Undeclared	15	646	0.20	0.12	0.28	0.28	0.27	0.34
Total	39	10,874	0.30	0.28	0.34	0.37	0.37	0.46

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with fewer than 15 students are not reported (n/r).

Table D1. *(continued)*

Raw Correlations with Second-Year Cumulative GPA by Major Category and Parental Education Level

			Bachelor's Degree					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	6	126	0.30	0.22	0.29	0.33	0.41	0.51
Biological and Biomedical Sciences	22	765	0.32	0.38	0.40	0.45	0.39	0.53
Business, Management, and Marketing	30	1,921	0.25	0.28	0.29	0.33	0.38	0.46
Communications/ Journalism	19	751	0.28	0.28	0.28	0.34	0.39	0.47
Computer and Information Science	5	189	0.24	0.20	0.25	0.28	0.42	0.45
Education	15	580	0.36	0.34	0.38	0.44	0.44	0.53
Engineering/ Architecture	15	1,670	0.25	0.29	0.31	0.36	0.35	0.44
Foreign Languages, Literatures, and Linguistics	4	96	0.54	0.39	0.54	0.58	0.44	0.65
Health Professions and Related Clinical Sciences	16	723	0.36	0.31	0.39	0.42	0.33	0.47
Humanities and Liberal Arts	28	1,462	0.33	0.28	0.40	0.41	0.45	0.53
Mathematics and Statistics/Physical Sciences	10	244	0.28	0.33	0.30	0.37	0.37	0.48
Security and Protective Services	5	106	0.38	0.37	0.41	0.46	0.45	0.56
Social Sciences	32	1,414	0.29	0.25	0.33	0.35	0.35	0.44
Social Services and Public Administration	2	25	n/r	n/r	n/r	n/r	n/r	n/r
Undeclared	12	495	0.24	0.20	0.29	0.30	0.32	0.39
Total	38	11,421	0.30	0.27	0.35	0.37	0.40	0.48

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with fewer than 15 students are not reported (n/r).

Table D1. *(continued)*

Raw Correlations with Second-Year Cumulative GPA by Major Category and Parental Education Level

			More Than a Bachelor's Degree					
Major Category	***k***	***n***	**SAT-CR**	**SAT-M**	**SAT-W**	**SAT***	**HSGPA**	**SAT*, HSGPA**
Agriculture/Natural Resources	6	159	0.34	0.32	0.35	0.40	0.49	0.56
Biological and Biomedical Sciences	28	1,356	0.26	0.31	0.34	0.37	0.33	0.45
Business, Management, and Marketing	29	2,143	0.25	0.28	0.30	0.34	0.37	0.46
Communications/ Journalism	20	919	0.30	0.26	0.32	0.35	0.39	0.48
Computer and Information Science	7	236	0.32	0.26	0.31	0.36	0.41	0.48
Education	16	595	0.37	0.28	0.41	0.42	0.36	0.49
Engineering/ Architecture	18	2,373	0.29	0.32	0.32	0.39	0.42	0.51
Foreign Languages, Literatures, and Linguistics	6	174	0.31	0.23	0.42	0.42	0.26	0.46
Health Professions and Related Clinical Sciences	17	714	0.35	0.34	0.40	0.43	0.40	0.52
Humanities and Liberal Arts	31	2,185	0.34	0.25	0.36	0.39	0.42	0.50
Mathematics and Statistics/Physical Sciences	16	482	0.32	0.39	0.37	0.45	0.41	0.54
Security and Protective Services	3	61	0.32	0.23	0.35	0.37	0.41	0.48
Social Sciences	28	2,329	0.30	0.23	0.35	0.37	0.37	0.48
Social Services and Public Administration	2	33	n/r	n/r	n/r	n/r	n/r	n/r
Undeclared	17	759	0.20	0.15	0.21	0.22	0.32	0.35
Total	39	15,322	0.31	0.26	0.35	0.37	0.40	0.49

Note: SAT* indicates that each of the three SAT sections was included as a separate predictor in the computation of the multiple correlation. Cells with fewer than 15 students are not reported (n/r).

Appendix E

Table E1.

Frequency of Unanalyzed Subgroups

	Race/Ethnicity						Parental Education Level	
	American Indian or Alaska Native		Other		Missing		Missing	
Major Category	*k*	*n*	*k*	*n*	*k*	*n*	*k*	*n*
Agriculture/Natural Resources	0	0	10	16	11	32	7	20
Biological and Biomedical Sciences	15	22	29	109	32	136	34	169
Business, Management, and Marketing	19	36	29	164	32	225	32	285
Communications/ Journalism	8	13	21	68	25	123	26	112
Computer and Information Science	4	4	8	12	13	40	18	68
Education	7	8	19	54	21	81	17	88
Engineering/ Architecture	10	18	20	147	20	207	21	260
Foreign Languages, Literatures, and Linguistics	4	5	10	19	18	50	11	32
Health Professions and Related Clinical Sciences	6	10	19	52	20	78	19	101
Humanities and Liberal Arts	18	28	31	141	33	278	34	203
Mathematics and Statistics/Physical Sciences	4	4	19	37	25	63	21	56
Security and Protective Services	3	6	9	16	9	18	14	25
Social Sciences	20	34	33	190	35	315	32	274
Social Services and Public Administration	2	3	6	6	8	8	7	10
Undeclared	9	16	16	63	19	115	18	111
Total	34	207	38	1,094	39	1,769	38	1,814

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