

Predicting Academic Achievement at a Selective Public University:

Lessons in Black and White

William Collins

University of Michigan

April, 2003

Predicting Academic Achievement at Selective Public University:

Lessons in Black and White

The College Board was formed in 1900 and set as one of its tasks the development of a set of essay examinations in order to assess preparation for college of students who had been taught under a variety of educational standards and who also faced a variety of individual college admission requirements (Beatty et al, 1999). By 1926, the examination was administered in a multiple-choice format which comprised the Scholastic Aptitude Test (SAT). An original purpose of such testing was to provide a common basis for making judgements because colleges often used their own individually developed admissions test. In addition, a common test served an egalitarian purpose as it provided a basis for admitting students to highly selective colleges who were intellectually talented, but who did not have the benefit of private schooling, legacy, or connections that might influence the admission decision. Over the next 70 years or so, selective colleges and universities increasingly have relied on standardized tests to help make decisions about which students to admit. Indeed, over 90 percent of public and private colleges require standardized test scores in the admissions process (Breeland, et al, 2002). Two major admissions tests are widely used

in the college admissions decision-making process: the SAT, produced by the Educational Testing Service (ETS), and the ACT administered by the American College Testing Program. Each year over a million college hopefuls sit for each of these tests as part of the admissions process.

The issue of testing and its relationship to academic achievement has a long and controversial history. The matter has been advocated, analyzed, questioned, and reviewed by some of the most influential minds in the field (Terman, 1919; Anastasi, 1968; Cornbach, 1975; Cleary, et al, 1975; Linn, 1982; Steele, 1997, Atkinson, 2001). More recently, several observers have raised questions challenging the original purpose of standardized tests in college admissions and even the testing enterprise itself. Lemann (1999) has provided a thorough and insightful account of the history of testing in the United States with an emphasis on its role as gatekeeper to opportunity, while also questioning the notion of “meritocracy” that has developed around the use of standardized tests. Sacks (1999) has gone even further in an account that excoriates the testing enterprise in general, but with special opprobrium for the SAT which he declares useless for its stated purpose. Even the National Research Council’s Board on Testing and Assessment (Beatty, et al, 1999), which recognizes the value of standardized tests, has identified the problem of their improper use in discussing the high stakes of educational testing. Steele (1997) has identified another troubling consideration in his

research suggesting that the test situation itself can introduce stereotype threats that can influence test performance. But perhaps one of the most controversial of positions on testing has been recent calls to eliminate the SAT-I from the college admissions process by former University of California President Richard Atkinson. Atkinson (2001), speaking before the American Council on Education, called for the abandonment of the SAT-I and its replacement with tests that assess mastery of specific subject areas. Atkinson felt this was necessary for a number of reasons, including, among others, the view that the SAT-I compromises the educational system because scores are over emphasized and inflated in importance, because students seek to learn test-taking tricks rather than real knowledge, and because the SAT is often considered to be unfair, and particularly so in minority communities.

Central to the issue of standardized testing as it relates to college admissions decision-making are two basic questions: 1) how valid are tests for predicting achievement in college and 2) whether or not the information available from standardized tests is being used properly. The first question can be answered through validity studies of tests, such as the SAT-I, using college academic achievement as the criterion. Answering the second question requires a realistic view of what testing can provide relative to the goals and purposes that colleges set for themselves. In this

regard, Atkinson's observation that minority communities in particular may consider the SAT-I unfair is a matter of added significance.

As a practical matter, colleges and universities have good reasons for seeking to educate a diverse student body (Rudenstein, 1998; Bowen and Bok, 1998) and this includes racial and ethnic diversity as well as gender diversity. Yet, the most selective colleges tend to have far more applicants than they have spaces for new students, so a basis for making selections is needed. Historically, that is for almost the last 100 years, that basis has included high school grades and performance on standardized tests such as the SAT. But over-reliance on test scores can serve to limit access to higher education by minorities because of group differences in performance on the tests (Lemann, 1999; Bowen and Bok, 1998). On the other hand, to ignore useful information related to future performance can result in considerable frustration if students find themselves unable to compete satisfactorily in the college academic environment.

These matters are of more than passing interest to me. For most of my 40-year career in higher education, I have worked to develop programs and activities that promote academic achievement, and with special focus on minority and economically disadvantaged students. The perspective gained from such work includes a keen awareness that many factors contribute to success in college. In fact, although prior

Predicting Academic Achievement

school achievement, such as measured by HSGPA or SAT, is important, it is not the only thing that matters. Indeed, neither raw endowment nor prior achievement suffice in an arena where motivation, conscientiousness, independence, and general adjustment serve to moderate performance as is the case in college. For some students, the mere fact of being on a college campus surrounded by like-minded individuals is intellectually stimulating, for other students the college campus can be a strange, even foreboding place and one in which they discover feelings of discomfiture. In such an environment, one finds many paradoxes, including students who appear well suited for college success based on traditional academic measures, but who do not succeed, as well as those with marginal academic assets who excel. At selective colleges in particular, admissions officers know that evidence of moderating factors can allow them to discount more traditional measures such as HSGPA and SAT and so they seek evidence of such indicators as leadership or motivation, for example, to add to their decision-making deliberations. Nevertheless, measures of prior academic achievement are recognized generally as good predictors of future success, even for minority and disadvantaged students. That is, the observation that high scorers tend to perform well academically in college relative to low scorers is just as true for black students, for example, as for white students.

As Anastasi (1968) has pointed out, the correlation coefficient for the relationship between two variables, such as HSGPA and college academic achievement, is in fact a measure of the validity of the relationship, though not a measure of causation. Much of the concern about the SAT is largely a question of its validity. That is, does it predict achievement in college? How does it compare with HSGPA in terms of predicting achievement? Is the SAT as valid for black students as it is for white students. Is the suspicion evident in minority communities about the SAT warranted? American society is rife with inequities and nowhere is that fact more evident than between the races. Matters of schooling and the prediction of school achievement are shaped by forces of inequality as well, making any given measure or outcome specious unless interpreted with the consideration for the context imposed by race. For example, such variables as income, standardized test performance and school achievement are all correlated, yet all are also confounded with race. This fact is of fundamental importance for the current study which is an examination of the validity of the SAT-I for predicting the academic achievement of black and white students at a selective public university.

METHOD

Students

The study examines the academic achievement of all black students and white students who enrolled in a selective public university as first year students in the fall terms of four consecutive years: 1993, 1994, 1995, and 1996. A total of 14,025 students comprise the population of which 1,640 were black and 12,385 were white.

Data

The data examined in this study were obtained from official university records. Included were such data as high school grade point average, standardized test scores, and college first semester grade point average, as well as demographic data such as race or gender. For purposes of analysis, and consistent with institutional admission practice, SAT verbal and Math scores were combined into a single "SAT-Total" score. The SAT-Total score was then standardized to national norms based on information provided by the testing agency for each year in question.

ANALYSIS

The data were analyzed using the Pearson product-moment correlation as well as Multiple Regression Analysis.

RESULTS

Table 1 presents means and standard deviations for academic achievement variables for each year and for the four years overall. White students are seen to score higher than black students on each variable and the differences are statistically significant (*Student's T* probability beyond the .01 level in each case). The differences in SAT scores are consistent with the well-known one-standard deviation difference between blacks and whites on standardized tests of a wide variety.

For purposes of analysis, a composite score was created for the HSGPA and SAT scores combined. This measured is labeled College Achievement Index (CAI) and is simply the sum of the student's HSGPA and normalized SAT score. Because the z-scores range from -3.0 to +3.0 a value of 3 was added to each score to eliminate negative numbers. Analyses using CAI are included in results reported here as well.

Table 2 is a summary table of product moment correlation coefficients showing the relationship between the academic achievement variables for the groups overall. For both the black and white students, HSGPA and SAT score are seen generally to have a medium correlation (Cohen, 1988) with FGPA, indicating that FGPA increases as HSGPA and SAT scores increase. Of particular interest, however, is the finding that HSGPA consistently produced a higher correlation with FGPA for white students than

for black students, while SAT score consistently produced a higher correlation with FGPA for black students than for white students. Figures 1 and 2 are graphical representations of the correlation coefficients obtained for the relationships between the academic achievement predictor variables of HSGPA and SAT, respectively, for each year and overall. Moreover, for each year, the correlation between FGPA and SAT score for black students is higher than the correlation between FGPA and HSGPA for whites. Although the differences are rather small, it is the consistency of the direction of the difference that is important relative to the view that SAT scores do not measure factors relevant to college achievement. Figure 3 is a bar graph of the correlation coefficients for the relationship between CAI and FGPA for each year and overall.

HSGPA and SAT score were entered in a Multiple Regression analysis to estimate their relative predictive power for FGPA as the criterion. Table 3 summarizes the results of the Multiple Regression analyses which were performed separately for the black and white students. The results indicated that for both black and white students, HSGPA was a better predictor of FGPA than SAT score and that it was stronger for white than for black students. The overall beta coefficients for HSGPA were .419 for white students and .349 for black students. However, SAT was a stronger predictor of FGPA for black students than it was for white students. The overall beta coefficient for SAT was .282 for black students and .19 for white students. We may interpret these beta

coefficients in terms of how student records are reviewed. HSGPA is frequently reported in increments of one-tenth of a point (i.e., 3.4 vs. 3.5), while SAT total scores, which have a standard deviation of 200 points, are reported in increments of ten points (i.e., 1130 vs. 1140). The regression analysis produced a Y-intercept of 1.392 for white students and 1.355 for black students. Thus, we can base our interpretation for both groups using their respective Y-intercepts. Applying the beta coefficients for each variable and for each group would mean that for white students, for every one-tenth of a point increase in HSGPA, FGPA is predicted to increase by about .042 of a point; and for every ten-point increase in SAT Total score, FGPA is predicted to increase by about .01 of a point. For black students, for every one-tenth of a point increase in HSGPA, FGPA is predicted to increase by about .035 of a point, while for every ten-point increase in SAT Total score, FGPA is predicted to increase by .014. The regression model allows for evaluation at the means of the covariates of HSGPA and SAT and yields a predicted FGPA of 2.6 and 3.1 for black students and for white students, respectively.

DISCUSSION

Colleges and universities occupy a unique place in American society. Their purposes include both individual empowerment, such as serving as training ground for future professionals, as well as concern for the public good as in addressing the future

needs of society, for example through technological innovation (Boyer, 1994). However, the most selective colleges, those in the top twenty percent, confront the problem of more applicants than spaces available and so have developed selection procedures that include standardized test results along with other factors intended to reveal prospects for success in college. The high stakes involved in such decisions means that considerable attention is given to the matter of achievement in college and its prediction. Historically, prior academic achievement has been recognized as the basis for judging the prospect of future academic achievement, with HSGPA and SAT scores representative of prior achievement. However, the validity of the SAT in particular, and standardized tests in general, had been questioned and with special concern expressed with respect to minority students (Lemann, 1999; Sacks, 1999; Atkinson, 2001).

The analysis provided by the present study offer some lessons in this regard with respect to selective college decision-making. First, both HSGPA and SAT were found to be valid predictors of college achievement and such a relationship was true for both black and white students. For both groups of students, HSGPA and SAT were found to have medium-sized correlations with FGPA (Cohen, 1988). Second, although HSGPA and SAT had significant correlations with first semester grades, the relation varied by race. Particularly interesting was the finding from data examined here that SAT had a higher correlation with FGPA for black students than it did for white students, while

HSGPA had a higher correlation with FGPA for white students than it did for black students. This finding is likely reflective of the increasingly fractious education system in the United States and its inherent inequalities. There is a long history of inequality between public versus private schooling as well as between schools located in wealthy communities as opposed to those located in poorer communities. Moreover, racially segregated schools are still common, with black and Hispanic students concentrated in urban and largely poor areas. More than two-thirds of black and Hispanic students attend predominantly minority schools (Education Trust, 1996). Such schools generally have fewer resources, less qualified teachers, and offer fewer advanced courses to prepare students for college.

Thus, it should come as no surprise that white college students usually will have attended high schools with more rigorous programs of study and as a result their high school grades would have a closer relationship to college grades than would be the case for black students. But in addition to such socio-cultural stratification of schools is the emergence of home schooling and charter schools as increasingly popular options. The United States Department of Education estimated that about 850,000 children were being educated at home at the turn of the twenty-first century. Parents may feel that home schooling offers more control over their children's education, but one effect of such a fractured educational system is that there is less confidence in the meaning one

can attach to high school grades. Differences in school quality, including the variety and rigor of courses offered, mean that grades earned in one school do not necessarily mean the same things as grades earned in a different schools. For minority students, standardized test results, such as SAT performance, may simply be a somewhat more consistent gauge of what they have learned relative to other students than high school grades. This does not mean that high school grades are unimportant. Rather, the two measures provide information of a different sort; one measure, high school grades, shows how the student performed in a local setting and colleges are rightly interested in this as a reflection of what the student does with the opportunities available. The other measure, SAT scores, shows how the student compares to the national population and this relative standing may be useful for assessing the degree of competition a student faces at a given college.

These findings and considerations lead to a third conclusion, and one that arguably is of greater importance. That is, one's performance on the SAT is a significant, but not a singular predictor of college academic achievement and the same can be said for HSGPA. Although SAT and HSGPA are statistically significantly correlated with FGPA, neither of these factors alone can account for college academic achievement. Even in combination they account for less than twenty percent of the variance in FGPA. This means that a variety of other factors together account for the remaining 85 percent-

or-so of variance in FGPA. It is clear that college success depends on a wide variety of interacting variables, including such variables as conscientiousness, maturity, and socio-economic status. Moreover, selective colleges tend to be residential which adds layers of personal and social adjustments for students to make at the same time that they are dealing with academic demands.

Therefore, SAT scores are valuable, but limited in what they can tell us about student prospects for academic success. To base the decision to admit a student to a selective college solely on test scores is to give far more weight to the test than it deserves. That is why selective colleges tend to incorporate flexibility into their admission decision-making process. When deciding which students to admit, it is important to consider evidence of such characteristics as maturity, responsibility, independence, leadership, conscientiousness, and potential for adjusting to novel circumstances. An admissions process that based its decisions solely on test score or solely on HSGPA would be ignoring those factors that potentially account for more than 80 percent of the variance in achievement. Moreover, although we do need uniform measures of prior achievement for purposes of comparison, such as grades or SAT, we should be open to wide variation in personal characteristics such a leadership or maturity which can take many forms. Grades and SAT scores provide a useful basis for grouping students into the broad categories of those who have demonstrated prior

success in academic settings and those who have not. But the context of prior achievement is also important and is influenced by factors such as school quality or socio-economic status as well as a host of factors in the affective domain such as motivation, interests or goals.

One way in which standardized tests may be considered valuable is to consider their contribution to admission decision-making as being confirmatory rather than determinative. This may be particularly useful with respect to decisions about minority students or others whose prior schooling circumstances do not conform to the traditional. The findings reported here indicate that SAT scores are about as good at predicting achievement for black students as for white students and even a little better in this selective college context. Thus, the suggestion to eliminate the SAT may be an example of throwing the baby out with the dirty bath water. The real problem that must be confronted is less one of the validity of test results than one of the value to be ascribed to tests. Standardized test performance has been accepted as a powerful admissions criterion despite the fact that it is well known that a wide variety of other factors influence college achievement as well. This amounts to an improper use of test scores resulting in their reification and an over reliance on single measures of achievement to the detriment of other useful indicators. The ascription of unwarranted power to test results, either as a single measure of past achievement or as a predictor of

future achievement, may well be the greater problem that needs to be rectified. In other words, the real problem with testing is less a question of validity than a matter of improper use of test results relative to the purposes at hand. Despite the considerable truth behind the sentiment that too much emphasis is placed on standardized test scores or that tests results are used improperly, it does not follow that standardized testing is invalid or should be dropped altogether. Rather, the truly ingrained problem to be dislodged is the penchant to rely upon a single measure for an outcome (in this case college academic achievement) that actually depends on multiple factors.

Consequently, it is an improper use of test results to rely solely on scores for decision-making when it is clear that a wide variety of other factors contribute to performance on the criterion measure. Standardized test scores tell how well a given student performed on a given set of measures administered under the same conditions. As such the test results provide a useful *relative* standard of achievement for the measures of concern. Perhaps the most useful thing that can be gleaned from the standardized test score is simply the student's level of achievement relative to others who took the same test. When the test has been administered to a million students across an entire nation, then considerable confidence can be placed in that particular aspect of the testing enterprise. However, it is clear that standardized test results constitute but one part of the admissions process and a limited aspect of the

achievement domain. As such, we should not expect test scores to predict achievement with infallibility given the number of additional contributing factors. Standardized test scores, although useful in context, have been given far more weight by the public than they deserve. Selective universities and testing professionals should be more forthcoming about the many additional factors that influence college admissions decision making.

Both test scores and grades are valuable for predicting which students are likely to succeed in college, but they are not without shortcomings. For example, test scores are highly correlated with SES and father's occupation, two factors that are more reflective of the accident of birth than the individual merit of the student. The value of high school grades, on the other hand, must be seen as moderated by the quality of the school itself. That is, excellent grades in a poor school or a weak curriculum are likely less useful for predicting college academic achievement than are good grades in a rigorous school or in a demanding curriculum. Used properly and in conjunction with each other, test scores and high school grades can be very helpful in the selective college admission decision-making process.

But we should not expect that test scores and grades should do much more than offer guidance in a rather broad sense about which student should be admitted to our

selective college and universities. That is because the selective college also endeavors to encourage students to explore, to challenge themselves intellectually, and to grow as they grapple with the potential adversities of the college experiences. One might rightly question the kind of higher learning that would result if students selected only safe courses in which they were predicted to do well on the basis of a test score or prior coursework. Not only would this make for a dull experience, it also would not serve the broadening function that college is supposed to be, nor would it prepare students for the complexity and uncertainty they will encounter in novel real world experiences. But just as important is the basic fact that talent alone is not always the determining factor for success in college or in life. Managing multiple tasks, interacting with others, and meeting deadlines are also important, as are independence, conscientiousness, and persistence. Sometimes these characteristics outweigh raw talent, both in college and in life. These characteristics are not measured by standardized tests, nor can they be known from the student's high school achievement. Thus to over-emphasize either grades or test scores is to ignore other important determinants of achievement. It is likely that both HSGPA and SAT scores reflect structural differences in society that affect the races and therefore cannot help but to be somewhat biased as measures of achievement. The societal differences are themselves largely economic and exert powerful influences affecting the communities in which people live, the quality of

schooling in those communities, the availability of role models and experiences for young people, their self-esteem and their aspirations. All of these factors in turn influence school adjustment, achievement and test performance.

In the end, the bigger problem may well be a preoccupation with seeking simple solutions for complex problems. In this case, we would do well to recognize that there is no single measure that can represent such disparate factors as prior school achievement, motivation, support and encouragement received, independence, conscientiousness, leadership, and adjustment to novel environments. Looking for such a single measure may prove to be a lesson in futility. What all of the evidence and thoughtful consideration that has been given to this subject really allows us to conclude is that testing, even the SAT, is significantly correlated with college achievement at a medium effect level; that prior schooling also predicts achievement, but such schooling varies by location; that individual character means a lot when it comes to adjusting to and succeeding in college; and that college admission decision-making would profit from duly considering all of these factors that can influence college achievement.

References

- Anastasi, A. (1968) Psychological Testing. London: The Macmillan Company.
- Atkinson, R. C. (2001) Standardized Tests and Access to American Universities. The 2001 Robert H. Atwell Distinguished Lecture, delivered at the 83rd Annual Meeting of the American Council on Education, Washington, DC: February 18, 2001.
- Beatty, A., Greenwood, M. R. C., and Linn, R. L (Eds.). (1999) Myths and Tradeoffs: The Role of Tests in Undergraduate Admissions. National Research Council Steering Committee for the Workshop on Higher Education Admissions. Washington, DC: National Academy Press,
- Bowen, W. G. and Bok, D. (1998) The Shape of the River: Long Term Consequences of Considering Race in College and University Admissions. Princeton, NJ: Princeton University Press.
- Bowers, J. (1970) The comparison of GPA regression equations for regularly admitted and disadvantaged freshmen at the University of Illinois. Journal of Educational Measurement, 7, 219-225.
- Boyer, E. (1987). College: The Undergraduate Experience. NY: Harper and Row, Publishers.

Predicting Academic Achievement

Breeland, H., Maxey, J., Germand, R., Cumming, T. and Trapni, C. (2002) Trends in College Admission 2000: A Report of a National Survey of Undergraduate Admissions Policies, Practices and Procedures. Joint ACT, AIR, College Board, ETS and NACAC Research Report

Cleary, T. A. (1968) Test bias: Prediction of grades of Negro and White students in integrated colleges. Journal of Educational Measurement, 5, 115-124.

Cleary, T. A., Humphreys, L. G., Kendrick, S. A., Wesman, A. (1975) Educational Uses of Tests with Disadvantaged Students. *American Psychologist*, v. 30, no.1, January, 1975, p 15-41.

Cohen, J. (1988) *Statistical Power analysis for the Behavioral Sciences* (2nd Edition). Hillsdale, NJ: Lawrence Erlbaum, Associates.

Cronbach, L. J. (1975) Five Decades of Public Controversy Over Mental Testing. *American Psychologist*, v. 30, no. 1, January, 1975, p 1-14. .

Lemann, Nicholas (1999) *The Big Test*. New York: Farrar, Straus, Giroux.

Linn, R. L. (1982) Admissions Testing on Trial. *American Psychologist*, v. 37, no. 3, 279-291.

Rudenstine, N. L. "Why a Diverse Student Body is so Important." In *The Chronicle of Higher Education*, vol. XLII, no. 32, April 19, 1996.

Sacks, P. (1999) *Standardized Minds: The High Price of America's Testing Culture and What We Can Do to Change It*. Cambridge, MA: Perseus Publishing.

Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, 52 (6), 613-629.

Terman, L. M. (1919) The Intelligence of School Children. Boston: Houghton-Mifflin.

United States Department of Education (2003). The Condition of Education. Washington DC: Government Printing Office.

Predicting Academic Achievement

Table 1. Means and standard deviations on academic achievement variables for black and white students for four years.

	<u>1993</u>		<u>1994</u>		<u>1995</u>		<u>1996</u>		<u>Overall</u>	
	B	W	B	W	B	W	B	W	B	W
<u>HSGPA</u>										
Mean	3.26	3.63	3.24	3.65	3.32	3.64	3.32	3.66	3.29	3.64
s.d.	.47	.32	.44	.31	.41	.31	.42	.31	.44	.32
<u>SAT*</u>										
Mean	.328	1.25	.319	1.27	.328	1.26	.15	1.05	.282	1.21
s.d.	.66	.59	.65	.57	.64	.57	.73	.64	.67	.60
<u>FGPA</u>										
Mean	2.6	3.1	2.5	3.1	2.6	3.1	2.6	3.2	2.6	3.1
s.d.	.73	.55	.74	.52	.71	.55	.73	.53	.73	.54
<u>N</u>	376	3,123	397	3,014	462	3,164	405	3,084	1,640	12,385

*SAT scores reported as z-scores standardized to national norms.

Predicting Academic Achievement

Table 2. Zero-order correlations between HSGPA, SAT, and FGPA for black and white students (years 1993 -1996). *

	HSGPA	SAT	CAI	FGPA
HSGPA		.216	.66	.250
SAT	.183		.876	.292
CAI	.587	.903		.348
FGPA	.284	.256	.335	

All correlations significant at the .01 level (2-tailed) with correlations for Blacks students above the diagonal and correlations for white students below the diagonal.

*Per Cohen (1998) .1 = small r

.3 = medium r

.5 = large r

Table 3. Intercepts and beta coefficients for academic achievement predictor variables for black and white students entering college in 1993, 1994, 1995 and 1996.

		Year				
		<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>Overall (s.e.)</u>
W						
	Y	1.304	1.502	1.281	1.528	1.391 (.053)
H						
	HSGPA	.438	.386	.427	.397	.419 (.015)
I						
	SAT	.188	.195	.230	.182	.190 (.008)
T						
	R ²	.128	.114	.139	.117	.122
E						
	n	3,123	3,014	3,164	3,084	12,385
S						
<hr/>						
B						
	Y	1.577	1.33	1.161	1.419	1.355 (.129)
L						
	HSGPA	.276	.345	.399	.349	.349 (.039)
A						
	SAT	.361	.293	.284	.236	.282 (.025)
C						
	R ²	.162	.130	.144	.115	.134
K						
	n	376	397	462	405	1,640
S						
	N	3,499	3,411	3,626	3,489	14,025

Figure 1. Bar Graph representing Correlation Coefficients of FGPAxHSGPA for Black & White Students

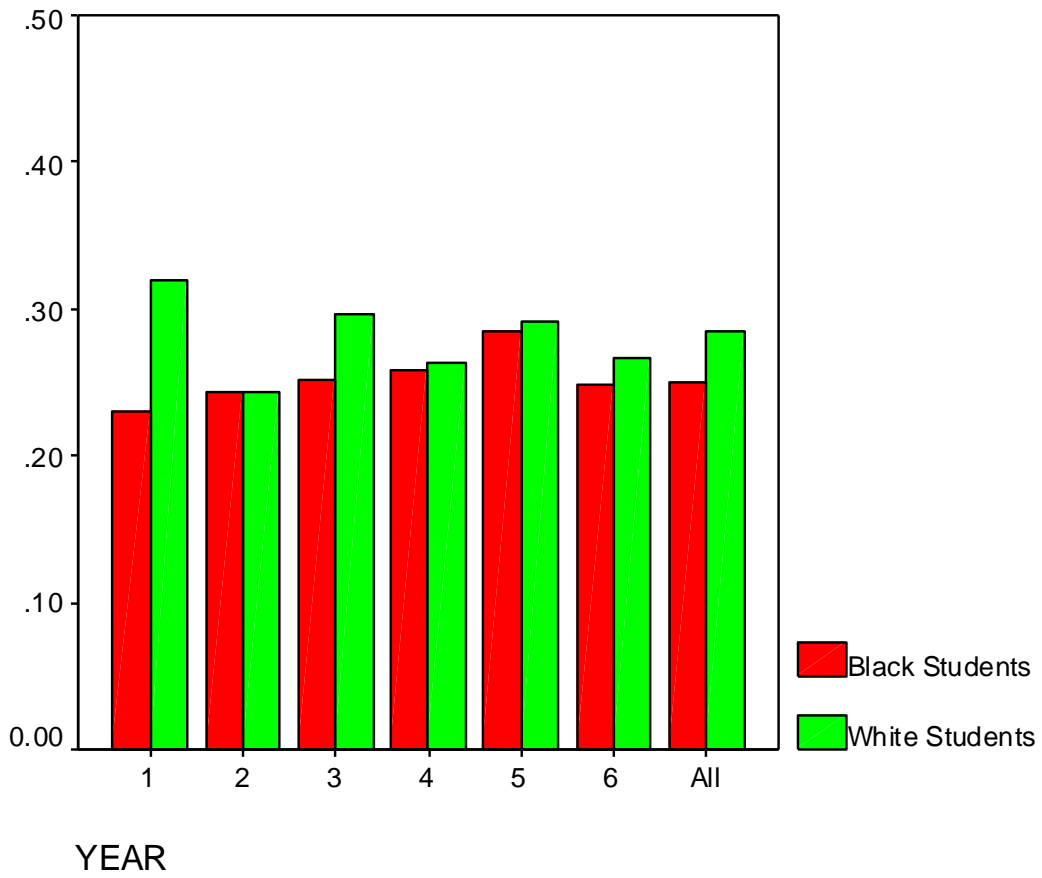


Figure 2: Bar graph of zero-order correlation coefficients for FGPA x SAT scores for Black and Whites students.

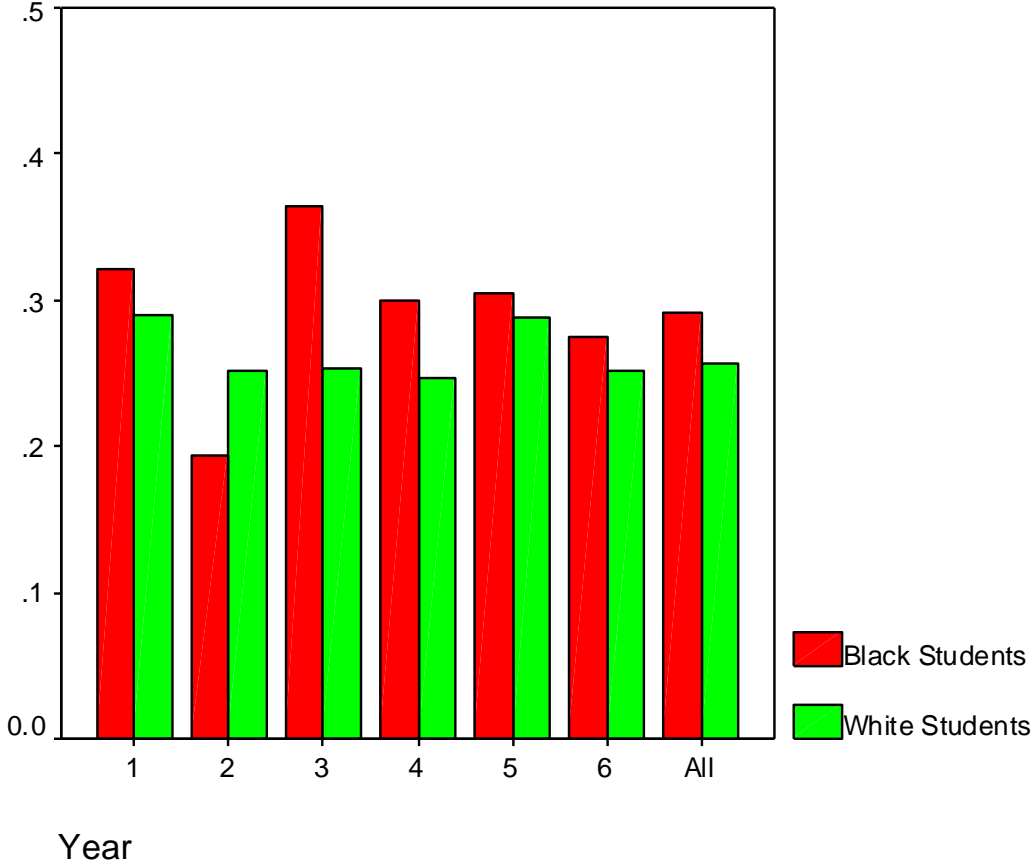


Figure 3. Bar Graph representing Correlation coefficients for FGPA x CAI for Black & White students

