DOCUMENT RESUME

ED 356 252 TM 019 677

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TITLE The Validity of the SAT as a Predictor of Grade Point Average for Nontraditional College Students.
PUB DATE Feb 93
NOTE 24p.; Paper presented at the Annual Meeting of the Eastern Educational Research Association (16th, Clearwater Beach, FL, February 17-22, 1993).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; *Adult Students; Age Differences; Black Students; *College Entrance Examinations; Comparative Testing; *Grade Point Average; Higher Education; *Nontraditional Students; *Predictive Validity; Racial Differences; Scores; Sex Differences; *Test Validity; Undergraduate Students; White Students
IDENTIFIERS *Scholastic Aptitude Test

ABSTRACT

This study of 570 (309 men and 261 women aged 16 to 60 years) undergraduate students in a small, regionally accredited, Southern church-related college was conducted to determine whether or not the Scholastic Aptitude Test (SAT) is a valid predictor of academic success for students who entered college late in life (after age 30 years). Data collected on this sample included semester-to-semester grade point average (GPA), cumulative GPA, gender, race, number of semesters enrolled, full-time student or part-time student status, cumulative SAT scores, and mathematics and verbal SAT scores. Of the sample, 501 were Caucasian and 45 were African American. It is concluded that the SAT is a valid predictor of academic success for Caucasian students under age 30 years, and that it is not a valid predictor of academic success for students who took the SAT after age 30 years. The SAT was not found to be a valid predictor of GPA for Black students regardless of age. Six tables present study data. (Contains 41 references.) (Author/SLD)

The Validity of the SAT as a Predictor of Grade Point Average for Nontraditional College Students

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A paper presented for presentation at the annual meeting of the Eastern Educational Research Association, Clearwater Beach, Florida, February, 1993.

Running head: THE VALIDITY OF THE SAT AS A PREDICTOR

ABSTRACT

This study of 570 undergraduate students in a small, regionally accredited, Southern, church-related college was conducted to determine if the SAT was a valid predictor of academic success for students who entered college late in life (after age 30). Data collected on this sample included semester-to-semester GPA, cumulative GPA, gender, race, number of semesters enrolled, full-time or part-time status, cumulative SAT scores, and math and verbal SAT scores. It was concluded that the SAT was a valid predictor of academic success for Caucasian students under age 30 and that it was not a valid predictor of academic success for students who took the SAT after age 30. The SAT was not found to be a valid predictor of GPA for black students regardless of age.

The Validity of the SAT as a Predictor of Grade Point Average for Nontraditional College Students

The usefulness of the Scholastic Aptitude Test (SAT) for predicting college grades has been researched since its inception. Numerous studies have produced evidence to suggest that the SAT is a valid predictor of college grade point average (Allen, Woodard, & Jones, 1990; Baird, 1984; Chissom & Lanier, 1975; Houston, 1987; Kaplan, 1982; Lenning, 1975; Nisbet, 1982; Robinson, 1984; Spence, Pred, & Helmreich, 1989). Likewise, several studies have shown that the verbal and math scores on the SAT are predictors of academic success as well (Gusset, 1974; Houston, 1987; Mauger & Kolmodin, 1975; Payne, Goolsby, Evans, & Barton, 1990; Stanfiel, 1973; Troutman, 1978). It has also been demonstrated that predictability can be improved when the SAT is used in conjunction with high school rank, Test of Standard Written English, or high school grade point average (Allen, 1990; Baird, 1984; Gottfredson & Crouse, 1986; Halpin, Halpin, & Schaer, 1981; Houston, 1987; McDonald & Gawkoski, 1979; Michael & Shaffer, 1979; Nisbet, 1982; Robinson, 1984; Weitzman, 1982; White, Nylin, & Esser, 1985).

Of immediate interest is the SAT's validity for older college students. Students who have been out of high school for several years would lack advantages (i.e. practice effects) which a high school student would have. Zeidner (1987) and Nettles,

Thoeny, and Gosman (1986) have shown age to be an important variable relating to the predictability of the SAT. Age has also shown to be a predictor variable on other types of tests (Branberg, Henriksson, Nyguist, & Wedman, 1990; Popovics, 1989).

Special Populations

Research studies have not always provided favorable data on the SAT for traditional college students. Crouse and Trusheim (1991) suggested that the SAT helps only minimally in predicting GPA. Dalton (1974) found that high school achievement was a better (although not good) predictor of academic success than the SAT.

Predictability of grade point average for specific populations has been shown to be complicated. Numerous variables have been found to affect the predictability of academic success. Questions have been raised about racial bias on the part of the SAT (Sowa, Thomson, & Bennett, 1989; Zeidner, 1987). The SAT has been demonstrated to be more predictable for women than men (Baggaley, 1974; Dalton, 1975). Gender differences have also been found in the SAT verbal and math scores (Bridgeman & Wendler, 1991; Houston, 1987). Time management (Britton & Tesser, 1991), type of high school (Schurr, Henriksen, & Ruble, 1990), effort (Wentzel, 1989), stress (Barnes, Potter, & Fiedler,

1983), and even interaction with faculty members (Pascarella & Terenzini, 1977) have all been shown to be correlated to grade point average (GPA).

The SAT has been recommended to colleges as a guide for admissions (Chissom, 1975; Lenning, 1975), and colleges and universities across the nation have adopted it as standard procedure in the admissions process. It has even been suggested that SAT scores of transfer students be used as supplemental information in evaluating their scholastic ability (Fincher, 1974). Many colleges use the SAT as the final authority for determining a student's preparedness for an academic future. Undoubtedly, the list of variables mentioned above is not exhaustive. Other factors must affect the predictability of academic success. Among other variables which have received little attention, age is one which requires investigation. First time college students over age thirty have been out of an academic routine for a decade or more. Certainly this would affect their performance on standardized tests. Does chronological age confound the validity of the SAT? If so, college and university admissions personnel should be aware of the effects of age differences in order to make the best judgments concerning admissions.

When this research was undertaken, it was hypothesized that older students would perform more poorly on the SAT than younger students but that the SAT would be a less valid predictor of GPA, both cumulative and first semester, for the older group. No gender differences were expected, but it was hypothesized that the SAT would be a poorer predictor of GPA for minority students.

METHOD

Subjects

Data was collected on 570 (309 men and 261 women) undergraduate students at a small, private college in the South. The majority of the sample was Caucasian (501), but minorities were represented (45 African Americans, 5 Orientals, 4 others). Of those included in the study all but 13 had earned high school diplomas. The other 13 had earned GED's. Data collected from the registrar's records on students attending this college over a fifteen year period included semester to semester GPA, cumulative GPA, gender, race, number of semesters enrolled, number of hours enrolled, cumulative SAT scores, and math and verbal SAT scores.

The students ranged in age from 16 to 60 with the majority (93%) entering college prior to age 30. As would be expected, most (96%) of the subjects took the SAT prior to age 30 as well. SAT cumulative scores ranged from 400 to 1360. Of the students

who were under age thirty, 95.6% were full-time students while 80.5% of the subjects over age thirty were full-time students. Finally, 30% of the sample stayed in school for four or more years.

RESULTS

Descriptive statistics were calculated on all variables. Table 1 provides the means by age group for Scholastic Aptitude scores, semesters completed, cumulative grade point averages, first semester grade point averages, age upon entering college, and age when taking the SAT.

Correlations of the scores for each age group for the SAT verbal, math, and cumulative scores with cumulative GPA were computed. Table 2 displays the these correlations.

Differences in SAT mean scores were found when subjects were selected by race. Table 3 displays those means for each age group by race for subjects who entered college after age thirty. Similar data is provided in Table 4 for the same population except that these subjects entered college after age thirty and also took the SAT after age thirty. Racial differences were also found when correlating these data for the younger age group. No significant correlations were found for white or for black students over age thirty. However, while the correlations for the white subjects under age thirty closely resembled those for

the general population (all significant at $p<.001$), there were no significant correlations for the black students in the same age group. These data are displayed in Table 5.

Table 1

Means for Variables by Age Group

Category	Overall	When the SAT was Taken		Age Entering College	
		Before Age 30	Age 30 or Later	Before Age 30	Age 30 or Later
SATV	392.32	395.48	346.70	393.71	379.10
SATM	413.40	418.25	337.05	417.35	363.98
SATCUM	805.66	812.99	690.75	811.48	736.68
Semesters Completed	4.69	4.66	5.90	4.65	5.29
Cummulative GPA	2.45	2.47	2.49	2.42	2.83
Semester 1	2.49	2.51	2.53	2.46	2.87
Age Entering College	20.88	19.99	37.50	19.72	35.71
Age When the SAT was Taken	18.79	18.10	36.25	18.12	27.92

Table 2

Correlations Between SAT and Cumulative GPA for Varying Age Groups

SAT	Overall	When the SAT Was Taken		Age Entering College	
		Before Age 30	Age 30 or Later	Before Age 30	Age 30 or Later
Verbal	.4871***	.4954***	.3095	.5052***	.4153**
Math	.4579***	.4726***	.1458	.4915***	.3505*
Cumulative	.5222***	.5369***	.1872	.5597***	.3387

*p<.01 **p<.001 ***p<.0001

Table 3

Means for Variables by Race and Age When Entering College

	White, Age 30 and Up (N=24)	Black, Age 30 and Up (N=17)	White Under 30 (N=477)	Black Under 30 (N=28)
SATV	430.04	307.18	401.92	287.78
SATCUM	835.58	597.06	826.69	604.29
SEMCOMP	5.67	4.76	4.75	3.93
CUMGPA	3.24	2.37	2.49	1.58
SEM1	3.31	2.24	2.52	1.69

Table 4

Means for Variables by Race and Age When the SAT was Taken

	White Age 30 and Up (N=10)	Black Age 30 and Up (N=10)	White Under 30 (N=456)	Black Under 30 (N=31)
SATV	376.40	317.00	404.61	291.40
SATCUM	779.50	602.00	830.32	606.77
SEMCOMP	5.80	6.00	4.76	3.90
CUMGPA	2.78	2.20	2.53	1.86
SEM1	3.05	2.01	2.57	1.94

Table 5

Correlations for GPA by SAT for Race and Age When the SAT was Taken

	White, Under Age 30 (N=456)	Black, Age Under Age 30 (N=31)	Total Under Age 30 (N=507)
CUMGPAxSATV	.4954*	.2021	.4954*
CUMGPAxSATM	.4701*	.0080	.4726*
SEM1xSATV	.5040*	.3036	.5034*
SEM1xSATM	.4623*	.0922	.4600*
CUMGPAxSATCUM	.5354*	.1576	.5369*
SEM1xSATCUM	.5377*	.2548	.5358*

*p<.001

In Table 6 one can see that the mean scores for SAT verbal, SAT cumulative, cumulative GPA, and first semester GPA are substantially lower for black students than for white students.

TABLE 6

Means for SAT Scores and GPA by Gender and Race

	All Females (N=261)	All Males (N=309)	White Females (N=233)	White Males (N=268)	Black Females (N=19)	Black Males (N=26)
SATV	388.98	395.15	399.20	406.81	293.79	296.40
SATCUM	788.84	819.87	808.44	843.36	585.79	613.08
SEMCOMP	4.15	5.15	4.22	5.28	4.00	4.42
CUMGPA	2.49	2.42	2.53	2.53	2.13	1.70
SEM1	2.53	2.45	2.56	2.57	2.26	1.63

A multiple regression equation for the overall sample as well as for white students, using a Stepwise procedure, showed the SAT cumulative score as the only predictor variable for cumulative GPA (r squared = .276). However, when subjects were isolated by race, a multiple regression equation isolated no predictor variables for black students for cumulative GPA. When selecting only black students and using the first semester GPA as the dependent variable, the SAT verbal score and gender were the

only two predictor variables evident (r squared = .235). The best predictor for all students over age thirty was the SAT verbal score (r squared = .249).

A multivariate analysis of variance showed only main effect differences for the age of entry ($p<.0001$) and the age at which the SAT was taken ($p<.01$).

DISCUSSION

A number of conclusions can be drawn from this research. First, the SAT cumulative score was a valid predictor of GPA for Caucasian students under age thirty but not for black students of any age. There was no decline in the validity of the SAT's predictability of grade point average over a four year period for students under age thirty. This finding resembles conclusions drawn by Butler and McCauley (1987). Second, the SAT cumulative score was not a valid predictor of cumulative grade point average for black students, but the regression formula showed that the SAT verbal score was a valid predictor for first semester grade point average for this population. Third, SAT scores were found to be invalid predictors of grade point average for students who had not taken the SAT prior to age 30 regardless of race. The SAT cumulative score was, however, a valid predictor of grade point average for white students over age 30 if the students took the SAT prior to age 30. Zeidner (1987) found that the SAT was

not a valid predictor for students over age 30, but he did not make a distinction between those who took the SAT before and after that age. Fourth, the SAT verbal score was a better predictor of both first semester GPA and cumulative GPA than the SAT cumulative score for the older group. Even though the correlation between SAT verbal score and first semester GPA was significant only at $p<.10$, according to regression equation, SAT verbal score was the most significant predictor of first semester GPA for individuals who had taken the SAT after age 30 (r squared = .249). Fifth, students over age 30, even though their mean SAT was lower than the mean SAT of younger students, had a higher first semester GPA. Finally, older students took an average of 1.36 semesters longer to graduate than the younger group even though the majority of both the older and younger groups were involved in school full-time..

This research has practical significance for a number of issues. For the best prediction of GPA, the admissions officer should consider a number of variables. Variables which have been shown to be predictors include high school rank (Robinson & Cooper, 1984; Troutman, 1978; Weitzman, 1982; White, Nylin, & Esser, 1985), Test of Standard Written English (Baird, 1984; Michael & Shaffer, 1979), and high school GPA (Larson & Scontrino, 1976; Kaplan, 1982; Slack & Porter, 1980). This

research provides data which suggests that the SAT cumulative and SAT verbal scores are valid predictors of GPA when age and race are taken into consideration.

The fact that older students entered with lower SAT scores and yet had higher GPA's indicates that an older student with a low SAT score will be more likely to succeed academically than a younger student with an equally low score. Perhaps this group of students is more focused on academic life and is more intent on completing academic tasks. Variables such as fear of school and fear of failure may explain why older students in this study were more likely to take a smaller class load, thus requiring them to stay in school more semesters.

Racial differences found in the data analysis present a difficult problem for those who write college admissions policies. Several recommendations can be made on the basis of this research. First of all, since SAT scores are not valid predictors of academic success for any individual over age thirty, some other instrument for predicting academic success is needed for black and white students older than thirty years of age. Second, admissions officers may elect to use the SAT verbal score as the primary predictor of college performance instead of the cumulative score for black students under age thirty. It should be noted that the college where this research was undertaken offered no degrees and only minimal course work in

math. These suggestions may not be valid for colleges where more math is required. Finally, some standardized admissions test tailored to an individual institution may be more predictive of college success than the SAT and, consequently, alleviate the apparent disparity between black and white students on the SAT. Some researchers have found noncognitive instruments to be superior to the SAT in predicting academic success in minority students (Tracey & Sedlacek, 1984).

It is possible that the homogeneity of group and the relatively small number of minority and older students who were included in this research can account for some of the variance which has been found. A follow-up study which includes a larger sample of subjects in these two groups could provide evidence to support or refute the conclusions stated herein.

Future research should include other variables such as high school rank, high school GPA, and Test of Standard Written English to see if these variables are equal to, better, or poorer predictors than those indicated in this study. Since the SAT verbal score is a poor predictor of GPA for students over age 30 who took the SAT after age 30, it would be advantageous to know if high school rank is a better predictor. This information could also support the hypothesis that high school GPA is a better predictor for black students than SAT scores (Dalton, 1974). It is recommended that future research include a

metaanalysis of research on the related variables which affect the prediction of grade point average. Many of these areas have been mentioned in this paper.

This research has provided data which has suggested appropriate uses for the Scholastics Aptitude Test as a predictive tool. It has also provided data which have suggested that there are situations for which the SAT would not be a valid predictor of academic success. In summary, the SAT is most valid for Caucasian students under age thirty. The SAT verbal score is a better predictor of academic success for black students under age thirty. The SAT is an invalid predictor of academic success for both black and white students if they have not taken the SAT by age thirty, and to refuse an older student admission to college based on SAT scores would be inappropriate.

REFERENCES

Allen, G.L., Woodard, E.A., & Jones, R.J. (1990). Measures of learning rate and scholastic aptitude as predictors of performance in training-oriented academic courses, Journal of General Psychology, 117(3), 277-293.

Baggaley, A.R. (1974). Academic prediction at an Ivy League college, moderated by demographic variables, Measurement and Evaluation in Guidance, 6(4), 232-235.

Baird, L.L. (1984). Predicting predictability: The influence of student and institutional characteristics on the prediction of grades, Research in Higher Education, 21(3), 261-279.

Barnes, V., Potter, E.H., & Fiedler, F.E. (1983). Effect of interpersonal stress on the prediction of academic performance, Journal of Applied Psychology, 68(4), 686-697.

Branberg, K., Henriksson, W., Nyguist, H., & Wedman, I. (1990). The influence of sex, education and age on test scores on the Swedish Scholastic Aptitude Test, Scandinavian Journal of Educational Research, 34(3), 189-203.

Bridgeman, B. & Wendler, C. (1991). Gender differences in predictors of college mathematics performance and in college mathematics course grades, Journal of Educational Psychology, 83(2), 275-284.

Britton, B.K. & Tesser, A. (1991). Effects of time-management practices on college grades," Journal of Educational Psychology, 83(3), 405-410.

Butler, R.P., & McCauley, C. (1987). Extraordinary stability and ordinary predictability of academic success at the United States Military Academy, Journal of Educational Psychology, 79(1), 83-86.

Chissom, B.S., Lanier, D. (1975). Prediction of first quarter freshman GPA using SAT scores and high school grades, Educational and Psychological Measurement, 35(2), 461-463.

Crouse, J. & Trusheim, D. (1991). How colleges can correctly determine selection benefits from the SAT, Harvard Educational Review, 61(2), 125-147.

Dalton, S. (1974). Predictive validity of high school rank and SAT scores for minority students, Educational and Psychological Measurement, 34(2), 367-370.

Dalton, S. (1976). A decline in the predictive validity of the SAT and high school achievement, Educational and Psychological Measurement, 36(2), 445-448.

Fincher, C. (1974). Is the SAT worth its salt? An evaluation of the use of the Scholastic Aptitude Test in the university system of Georgia over a thirteen-year period, Review of Educational Research, 44(3), 293-305.

Gottfredson, L.S., & Crouse, J. (1986). Validity versus utility of mental tests: Example of the SAT, Journal of Vocational Behavior, 29(3), 363-378.

Gussett, J.C. (1974). College Entrance Examination Board Scholastic Aptitude Test scores as a predictor for college freshman mathematics grades, Educational and Psychological Measurement, 34(4), 953-955.

Halpin, G., Halpin, G., & Schaer, B.B. (1981). Relative effectiveness of the California Achievement Tests in comparison with the ACT Assessment, College Board Scholastic Aptitude Test, and high school grade point average in predicting college grade point average, Educational and Psychological Measurement, 41(3), 821-827.

Houston, L.N. (1987). The predictive validity of a study habits inventory for first semester undergraduates, Educational and Psychological Measurement, 47(4), 1025-1030.

Kaplan, R.M. (1982). Nader's raid on the testing industry: Is it in the best interest of the consumer?, American Psychologist, 37(1), 15-23.

Larson, J.R., & Scontrino, M.P. (1976). The consistency of high school grade point average and of the verbal and mathematical portions of the Scholastic Aptitude Test of the College Entrance Examination Board, as predictors of college performance: An eight year study, Educational and Psychological Measurement, 36(2), 439-443.

Lenning, O.T. (1975). Predictive validity of the ACT tests at selective colleges, ACT Research Reports, Aug(69), 14.

Mauger, P.A., & Kolmodin, C.A. (1975). Long-term predictive validity of the Scholastic Aptitude Test, Journal of Educational Psychology, 67(6), 847-851.

McDonald, R.T., & Gawkoski, R.S. (1979). Predictive value of SAT scores and high school achievement for success in a college honors program, Educational and Psychological Measurement, 39(2), 411-414.

Michael, W.B., & Shaffer, P. (1979). A comparison of the validity of the Test of Standard Written English (TSWE) and of the California State University and Colleges English Placement Test (CSUC-EPT) in the prediction of grades in a basic English composition course and of cverall freshman- year grade point average, Educational and Psychological Measurement, 39(1), 131-145.

Nettles, M.T., Thoeny, A.R., & Gosman, E.J. (1986). Comparative and predictive analyses of black and white students' college achievement and experiences, Journal of Higher Education, 57(3), 289-318.

Nisbet, J., Ruble, V.E., & Schurr, K.T. (1982). Predictors of academic success with high risk college students, Journal of College Student Personnel, 23(3), 227-235.

Pascarella, E.T., & Terenzini, P.T. (1977). Patterns of student faculty informal interaction beyond the classroom and voluntary freshman actrition, Journal of Higher Education, 48(5), 540-552.

Payne, D.A., Goolsby, C.E., Evans, K.A., & Barton, R.M. (1990). Multivariate analyses of cognitive and cognitive style variables based on hemisphere specialization theory predictive of success in a college developmental studies program, Perceptual and Motor Skills, 71(2), 545-546.

Popovics, A.J. (1989). Predicting scores on the Pennsylvania Teacher Certification Testing Program Core Battery, Educational and Psychological Measurement, 49(3), 649-652.

Robinson, D.A., & Cooper, S.E. (1984). The influence of self-concept on academic success in technological careers, Journal of College Student Personnel, 25(2), 145-149.

Schurr, K.T., Henriksen, L.W., & Ruble, V.E. (1990). The use of the College Board classification of high schools in predicting college freshmen grades, Educational and Psychological Measurement, 50(1), 219-223.

Slack, W.V., & Porter, D. (1980). The Scholastic Aptitude Test: A critical appraisal, Harvard Medical School, 50(2), 154-175.

Sowa, C.J., Thomson, M.M., & Bennett, C.T. (1989). Prediction and improvement of academic performance for high-risk Black college students, Journal of Multicultural Counseling and Development, 17(1), 14-22.

Spence, J.T., Pred, R.S., & Helmreich, R.L. (1989). Achievement strivings, scholastic aptitude, and academic performance: A follow-up to "Impatience versus achievement strivings in the Type A pattern," Journal of Applied Psychology, 74(1), 176-178.

Stanfiel, J.D. (1973). Socioeconomic status as related to aptitude, attrition, and achievement of college students, Sociology of Education, 46(4), 480-488.

Tracey, T.J., & Sedlacek, W.E. (1984). Noncognitive variables in predicting academic success by race, Measurement and Evaluation in Guidance, 16(4), 171-178.

Troutman, J.G. (1978). Cognitive predictors of final grades in finite mathematics, Educational and Psychological Measurement, 38(2), 401-404.

Weitzman, R.A. (1982). The prediction of college achievement by the Scholastic Aptitude Test and the high school record, Journal of Educational Measurement, 19(3), 179-191.

Wentzel, K.R. (1989). Adolescent classroom goals, standards for performance, and academic achievement: An interactionist perspective, Journal of Educational Psychology, 81(2), 131-142.

White, W.F., Nylin, W.C., & Esser, P.R. (1985). Academic course grades as better predictors of graduation from a commuter-type college than SAT scores, Psychological Reports, 56(2), 375-378.

Zeidner, M. (1987). Age bias in the predictive validity of scholastic aptitude tests: Some Israeli data, Educational and Psychological Measurement, 47(4), 1037-1047.

Zeidner, M. (1987). Test of the cultural bias hypothesis: Some Israeli findings, Journal of Applied Psychology, 72(1), 38-48.