PERSONALITY AS A PREDICTOR OF COLLEGE PERFORMANCE

RAYMOND N. WOLFE
State University of New York, College at Geneseo

SCOTT D. JOHNSON
St. Bonaventure University

Total SAT score, average grade earned in high school, and 32 personality variables are examined via forward multiple regression analyses to identify the best combination for predicting GPA in a sample of 201 psychology students. Average grade earned in high school enters first, accounting for 19% of the variance in GPA. Self-control enters second, and SAT third; these account for 9% and 5% of the variance, respectively. No other predictors accounted for substantial portions of variance. This pattern of results converges with findings reported by other investigators using other measures of personality. It was recommended that the global trait of self-control or conscientiousness be systematically assessed and used in college admissions decisions.

Admission to many colleges and universities is determined by the applicant's scholastic record in high school and performance on the Scholastic Aptitude Test (SAT) (Educational Testing Service, 1948-1993). The two variables together usually account for about 25% of the variance in grade point average (GPA). During the 1980s, there was a drop in the predictive validity of the SAT, especially in data from selective institutions (Willingham, Lewis, Morgan, & Ramist, 1990). However, because the SAT is redundant with high school record, the regression equation used by most colleges did not show a corresponding drop in validity.

Assuming that the decline in SAT validity is in part a consequence of nationwide trends toward lower literacy (Botstein, 1990) and/or more lenient grading in colleges (Sabot & Wakeman-Linn, 1991), it seems likely to

Educational and Psychological Measurement, Vol. 55 No. 2, April 1995 177-185

continue. If it does, one can anticipate a demand for better predictors of GPA in the future.

Personality variables may be able to fill this role. Studies with the High School Personality Questionnaire (Schuerger & Kuna, 1987), for example, bear out Cattell and Butcher's (1968) idea that individual differences in self-control should account for an appreciable portion of variance in academic outcomes beyond that accounted for by ability variables. In Schuerger and Kuna's (1987) data, Factor G, Conscientiousness, and Factor Q_3, Self-disciplined, each added significantly to variance explained by Factor B, Intelligence.

As Cattell's 16 dimensions evolved into the Big 5 model, Factors G and Q_3 coalesced to form the Conscientiousness superfactor (John, 1990). Conscientiousness, or a construct very similar to it, has a place in all current descriptive models of personality and exhibits significant positive relationships with performance not only in school (Digman & Takemoto-Chock, 1981) but also in the workplace (Barrick & Mount, 1991).

Constructs resembling Conscientiousness include Control (from Tellegen's Big 3 model) (Waller, Lilienfeld, Tellegen, & Lykken, 1991), Organization (Jackson, 1976), and General self-efficacy (Sherer et al., 1982). The item sets used to measure these constructs exhibit a large amount of thematic overlap; each set states or implies self-control, task-orientedness, planfulness, promptness, persistence, efficiency or effectiveness, and self-reliance. In the research described here, these Trait × Method combinations are pitted against other personality variables and against each other to see how well they are able to account for variation in college GPA.

Method

Subjects

Data were collected from small groups of students enrolled in psychology courses at the State University of New York, College at Geneseo, who participated in a 90-min session to earn optional extra credit toward their grade. Usable protocols were obtained from 201 subjects (157 women, 44 men).

Written permission was obtained from each subject to retrieve high school grades, SAT scores, and cumulative GPA at the end of the semester. This information was provided by the College's Records Office. High school grades were unavailable for 14 subjects; SAT scores were unavailable for 20 subjects.

Measures

Subjects first completed the Jackson Personality Inventory (JPI) (Jackson, 1976), then completed a 155-item booklet of items with a 5-point Likert format. The two questionnaires yielded four subsets of personality variables: JPI, Big 3, Big 5, and Other.

JPI

This standardized test consists of 320 true/false items that yield 15 personality scores and an Infrequency score that is defined as the number of implausible responses, "possibly due to carelessness, poor comprehension, or passive noncompliance" (Jackson, 1976, p. 11).

BIG 3

Tellegen (1985) identified Positive Emotionality, Negative Emotionality, and Constraint as the basic dimensions of personality. In his Multidimensional Personality Questionnaire (MPQ), Positive Emotionality is assessed by four scales, Negative Emotionality by three, and Constraint by four. Because the MPQ was too long (300 items) to be completed with the other measures used in this research in the allotted 90 min, one scale was selected to represent each basic dimension: Well-being for Positive Emotionality, Stress reaction for Negative Emotionality, and Control for Constraint (these scales demonstrated slightly larger validity *r*s against Cloninger's Tridimensional Personality Questionnaire than did the other scales in their respective clusters) (Waller et al., 1991). Another deviation from the standard MPQ procedure resulted from an attempt to make the 155-item booklet easier for subjects to complete by using the same Likert format throughout (ordinarily, the MPQ is administered in true/false format).

BIG 5

The five-factor model (John, 1990) is a descriptive framework within which all the important individual differences in personality are subsumed under five global traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. The most widely used measures of the Big 5 were too long to fit into the test administration sessions, so the 35-item Big 5 Inventory devised by John, Donahue, and Kentle (1991) was chosen.

OTHER

The 155-item booklet contained, in addition to measures of the Big 3 and the Big 5, items assessing need for cognition, general self-efficacy, self-

handicapping, academic procrastination, and other variables likely to be associated with GPA, such as alcohol use, marijuana use, and class attendance.

Results

Distributions of average high school grade (M = 90.6, SD = 4.2), SAT (M = 1103.5, SD = 118.1), and GPA (M = 2.8, SD = 0.5) are very close to those of recent samples studied here, as well as to collegewide data for 1990, 1991, 1992, and 1993 obtained from the SUNY Geneseo Office of Institutional Research. The absolute levels of high school average and SAT imply selectivity, and similarities to archival data imply that the present sample is fairly representative of the entire student body in terms of the three academic dimensions. However, no information was available regarding the sample's representativeness with respect to personality. Most of the measures had not been used in this setting before; some had been used, but in a form yielding noncommensurable scores.

Descriptive statistics are presented in Table 1. For the JPI variables, observed means approximated Jackson's (1976, p. 12) college norms on 13 of the 16 dimensions. Anxiety, Social participation, and Traditional values were about two points higher in the present sample than in the normative sample. The observed SD is very similar to the normative SD for each variable. For the Big 3, lack of commensurability makes it difficult to compare these observations with other data. For the Big 5 scales provided by John et al. (1991), norms are not yet available. For the variables listed under Other, comparisons are probably unwarranted because of noncommensurability and/or absence of norms.

Correlational Analysis

As expected on the basis of other investigators' findings, average grade earned in high school correlated slightly better with GPA, r = .40, than did SAT, r = .34, and average grade earned in high school correlated moderately (.41) with SAT. Of the predictors listed in Table 1, 14 were significantly associated with GPA, 5 with high school grades, and 3 with SAT. Among those associated with GPA are the self-control variables noted by Cattell and Butcher (1968).

Regression Analysis

Forward multiple regression analysis with a p-to-enter of .05 was carried out on each subset of personality variables and on all 32 variables, with

Table 1
Descriptive Statistics for 32 Predictor Variables and Correlations With Three Academic Indices

Measure/variable/ (number of items)	Mean[a]	*SD*[a]	Coefficient alpha[a]	Pearson *r* with GPA[a]	HSA[b]	SAT[c]
JPI (20 items each)						
Anxiety	13.66	3.84	.79	.15*	.10	−.06
Breadth of interest	10.64	4.14	.77	.05	−.07	.05
Complexity	10.94	3.34	.68	.04	−.08	.10
Conformity	9.18	4.56	.83	.21**	.13	.04
Energy level	10.46	3.93	.76	.11	.06	−.05
Innovation	11.79	4.96	.87	.03	−.18*	.02
Interpersonal warmth	14.25	3.71	.76	.20**	.10	.09
Organization	10.52	4.77	.84	.28**	.08	−.10
Responsibility	12.23	3.01	.63	.13	.08	.05
Risk taking	7.89	4.85	.86	−.31**	−.19*	−.03
Self-esteem	11.45	4.33	.82	.03	−.06	−.07
Social adroitness	10.75	3.45	.64	.08	.02	.05
Social participation	12.12	4.48	.82	.10	.11	.10
Tolerance	12.25	3.37	.68	−.05	−.07	.08
Value orthodoxy	9.04	3.96	.75	.04	.09	−.14
Infrequency	.56	1.04	.55	−.28**	−.16*	−.20*
Big 3						
Well-being (11)	36.85	7.73	.89	.10	−.03	−.12
Stress reaction (26)	56.77	20.20	.93	−.05	−.05	−.07
Control (24)	70.93	16.18	.92	.38**	.16*	.02
Big 5 (7 items each)						
Extraversion	16.44	5.62	.81	−.08	−.00	−.12
Agreeableness	20.23	4.72	.75	.08	−.14	−.17*
Conscientiousness	16.86	4.74	.76	.34**	.07	.01
Neuroticism	11.89	6.67	.87	−.02	−.02	−.03
Openness	15.91	4.69	.68	.10	.05	.09
Other						
Need for cognition (15)	44.47	10.47	.88	.26**	.08	.20**
Self-efficacy (17)	53.94	9.97	.87	.29**	.07	.06
Self-handicapping (10)	22.36	6.13	.63	−.23**	−.08	−.07
Procrastination (5)	10.25	3.64	.81	−.25**	−.13	.08
Alcohol use (2)	3.13	2.13	.18	−.17*	−.07	.01
Marijuana use (7)	1.30	1.94	.69	−.07	−.17*	−.03
Religiosity (2)	1.73	1.46	.64	.01	.01	−.10
Attendance (1)	2.18	.85	—	.22**	.13	−.06

Note. JPI = Jackson Personality Inventory; GPA = cumulative grade point average; HSA = average grade earned in high school; SAT = total score on Scholastic Aptitude Test.

a. $N = 201$.

b. $N = 187$.

c. $N = 181$.

*$p < .05$, two-tailed test; **$p < .01$, two-tailed test.

Table 2
Results of Forward Multiple Regression Analyses: Cumulative College GPA Regressed on High School Average and SAT Total Together With Scores on the Jackson Personality Inventory (JPI), the Big 3, the Big 5, Other Predictors, and All Predictors

Analysis	Step	Predictor	Beta	Increment in R^2
JPI scales	1	High school average	.43	.19**
	2	Organization	.27	.07**
	3	SAT total	.26	.05**
	4	Infrequency	–.16	.03*
	5	Risk taking	–.17	.02*
	6	Innovation	.16	.02*
Final R^2				.38**
Big 3	1	High school average	.43	.19**
	2	Control	.32	.09**
	3	SAT total	.24	.05**
	4	Well-being	.13	.02*
Final R^2				.35**
Big 5	1	High school average	.43	.19**
	2	Conscientiousness	.31	.09**
	3	SAT total	.23	.04**
Final R^2				.32**
Other predictors	1	High school average	.43	.19**
	2	Self-efficacy	.27	.08**
	3	SAT total	.21	.03**
	4	Attendance	.16	.02*
Final R^2				.32**
All predictors	1	High school average	.43	.19**
	2	Control (from Big 3)	.32	.09**
	3	SAT total	.24	.05**
	4	Infrequency (from JPI)	–.14	.02*
Final R^2				.35**

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

average grade earned in high school and SAT included as predictors in each analysis. Table 2 summarizes the results, showing a clear pattern: Average grade earned in high school enters first, a self-control variable enters second, and SAT enters third. Approximately one third of the variance in GPA is accounted for by these three predictors. In some analyses, additional variables (e.g., Infrequency, Attendance) are able to account for 2% or 3% of the remaining variance.

Intercorrelations among the self-control variables show that Organization, Control, and Conscientiousness have much in common, with *r*s ranging from .68 to .73. Self-efficacy appears to be a different sort of variable. Although it accounts for essentially the same portion of variance in GPA as the other self-control variables do, its similarity to Conscientiousness, $r = .60$, is significantly greater than its similarity to Organization, $r = .32$, $t_{diff}(198) = 5.91$, $p < .01$, or Control, $r = .34$, $t_{diff}(198) = 5.06$, $p < .01$.

Discussion

The present findings are consistent with those of recent investigations (e.g., Willingham et al., 1990), showing that SAT is quite redundant with high school record in predicting GPA. Willingham et al. added the qualifier "particularly at selective colleges," and the current data are from an institution with high admissions standards. It may be, however, that redundancy is becoming the rule regardless of selectivity; the R^2 for SAT by itself in the present results is .12, which is exactly the value recently reported at a less selective institution (Hatcher, Prus, Englehard, & Farmer, 1991).

When variables from the personality domain are examined in the role of predictors, results here are much the same as those found by previous investigators; namely, self-control emerges as the most robust predictor. The multiple regression outcomes in Table 2 indicate that for the purpose of predicting GPA, it does not matter much how self-control is defined or measured. Organization, Control, Conscientiousness, and Self-Efficacy all appear to do roughly the same kind of explanatory work and to account for roughly equal portions of GPA variance, and all enter their respective analyses ahead of SAT. Control emerges as the best of the lot, perhaps because it is slightly more reliable than the others (values of Cronbach's alpha are .92 for Control, .87 for Self-Efficacy, .84 for Organization, and .76 for Conscientiousness). The Control scale predicts well here even though its items are removed from their usual MPQ context, presented together (they are interspersed throughout the 300-item MPQ), and answered in Likert rather than true/false format. In spite of its comparatively low reliability, John et al.'s (1991) 7-item Conscientiousness scale is nearly as valid as the 24-item MPQ Scale. It is possible that the full complement of MPQ Constraint items would have produced an R^2 change larger than .09: Constraint as measured by the General Temperament Survey recently accounted for R^2 change values of .12 ($N = 259$) and .07 ($N = 69$) in hierarchical multiple regression analyses of data from two college samples (Watson & Clark, 1993).

How might college officials systematically consider self-control variables in the admissions process? Face valid instruments such as those used here are able to be faked; it seems likely that if they were used as part of a selection battery, their predictive strength would be less than that shown in the present results. Ratings made by knowledgeable informants are a plausible alternative. For each of six facets of Conscientiousness measured in adults by the NEO-PI-R (competence, order, dutifulness, achievement striving, self-discipline, and deliberation), for example, there is significant convergence between peers' judgments and subjects' NEO-PI-R scores, with *r*s ranging from .26 to .42 (Costa & McCrae, 1992, pp. 49-50).

A "common language" version of the California Child Q-Set (Caspi et al., 1992), devised for use by untrained raters, also holds promise. In a study by John, Caspi, Robins, Moffitt, and Stouthamer-Loeber (1994), adolescent

boys' mothers described them via the Child Q-Set. These descriptions yielded seven factors, five of which were fairly congruent with adult equivalence factors for the Big 5 obtained from the California Q-Set (McCrae, Costa, & Busch, 1986). John et al. (1994) presented a nine-item scale, Conscientiousness vs. Lack of Direction (a sample item: "He pays attention well and can concentrate on things"), that can be used by teachers, parents, peers, and employers or supervisors.

The practical problems of identifying raters and obtaining their independent and thoughtful cooperation are, of course, considerable. And it may be difficult to find informants who are both knowledgeable and disinterested. Teacher ratings might be preferable to others in these respects, but the likelihood that teachers' opinions are already represented in high school grades brings up once again the potential problem of redundancy among predictors. Averaging of judgments from several raters (including one teacher) should remedy this problem.

As the SAT continues to show signs of weakness as a selection device, promising alternatives should be tested. There is now a fair amount of evidence to indicate that assessment of self-control or conscientiousness merits close attention in the admissions process.

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