Acquaintance Reports of Personality and Academic Achievement:

A Case for Conscientiousness

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Running Head: Conscientiousness and Academic Achievement

Abstract

The present article examines personality as a predictor of college achievement beyond the traditional predictors of high school grades (HSGPA) and SAT scores. In an undergraduate sample (N=131), self and informant-rated conscientiousness using the Big Five Inventory (BFI; John, Donahue & Kentle, 1991) robustly correlated with academic achievement as indexed by both freshman GPA and senior GPA. A model including traditional predictors and informant ratings of conscientiousness accounted for 18% of the variance in freshman GPA and 37% of the variance in senior GPA; conscientiousness alone explained unique variance in senior GPA beyond the traditional predictors, even when freshman GPA was included in the model. Conscientiousness is a valid and unique predictor of college performance, and informant ratings may be useful in its assessment for this purpose.

Acquaintance reports of personality and academic achievement: A case for conscientiousness

The question of what makes a good student "good" lies at the core of a socially-relevant discussion of college admissions criteria. While past research has shown personality variables to be related to school performance (e.g. Costa & McCrae, 1992; De Raad, 1996), academic achievement is still widely assumed to be more a function of intellectual ability than personality. The purpose of this study is to address two ambiguities that trouble past research in this area: the choice of conceptually appropriate outcome measures and the overuse of self-report data.

A highly influential meta-analysis by Barrick and Mount (1991) concluded that conscientiousness is a robust and valid predictor of job performance across all criteria and occupations. Soon after, Costa and McCrae (1992) provided evidence that conscientiousness is likewise related to *academic* performance. This finding has been replicated by others (recently, Chamorro-Premuzic & Farnham, 2003a and 2003b). Moreover, conscientiousness appears to be free of some of the unwanted complications associated with ability as assessed by the SAT: Hogan and Hogan (1995) reported that personality inventories generally do not systematically discriminate against any ethnic or national group, and thus may offer more equitable bases for selection (see also John, et al., 1991).

Still, skepticism remains. Farsides and Woodfield (2003) called the relationship between personality variables and academic performance in previous literature "erratic and, where present, modest" (p. 1229). Green, Peters and Webster (1991) found academic success only weakly associated with personality factors; Rothstien, Paunonen, Rush and King (1994) found that the Big Five factors failed to significantly predict academic performance criteria among a sample of MBA students; Allik and Realo (1997) and Diseth (2003) found most of the valid variance in achievement to be unrelated to personality.

The current study seeks to address two pervasive obstructions to conceptual clarity in the previous literature:

1) *Lack of consistency in the measurement of "academic achievement."* Past studies have used individual exam grades, final grades in a single course, semester GPA, year-end GPA, GPA at the time of the study, or variables such as attendance or participation. The present study uses concrete and consequential outcomes: freshman cumulative GPA (fGPA; the measure most commonly employed in previous research) and senior cumulative GPA (sGPA; a final, more comprehensive measure of college success.).

2) *Near-exclusive use of self-report personality measures.* Reliance on self-reports can be problematic because what one believes of oneself may or may not be an accurate or complete assessment of one's true strengths and weaknesses. Thus, the present research utilizes ratings of personality provided by the self *and* by informants. As the personality inventories used in these analyses were administered up to three years prior to the measurement of the dependent variable, finding a meaningful relationship between the two will provide evidence that one's traits – evaluated by someone else and a number of years in the past! – are consistent enough to serve as useful predictors of a real and important outcome.

Within the confines of these parameters, and based upon previous literature, it is hypothesized that: conscientiousness will fail to show the mean differences in ethnicity problematic of SAT scores; both self- and informant-rated conscientiousness will be positively and significantly related to both outcome measures; and finally, conscientiousness will be capable of explaining incremental variance in both outcome measures beyond what is accounted for by the traditional predictors.

Method

Participants

This study examined the predictors of academic achievement in a sample of 131 target participants (54.2% female, 45.8% male), who were those among an original sample of 217 undergraduates with sufficiently complete data for the present analyses, as described below. Due to the "minority majority" status of the UCR campus population, the diverse sample included substantial proportions of Asians or Asian Americans (43.5%), Hispanics or Latin Americans (19.8%), Caucasians (16.0%), African Americans (12.9%), and students of other ethnic descent (7.6%). The study also includes 258 informants who described participants with whom they were acquainted. Each target participant and informant was paid $10 per hour. The larger data set was originally designed to explore issues of accuracy in personality judgment. Other analyses, completed and planned (see Letzring, Block & Funder, 2004; Letzring, Wells & Funder, in press; Vazire & Funder, 2006), address different topics and do not overlap with those in the current study.

Targets & Informants

To deal with missing data, all participants in the larger sample who were lacking any one of the predictor variables (SAT score, HSGPA, or either self- or informant-rated Conscientiousness) were dropped (reducing the N from 217 to 153 at this stage of selection). Among the remaining participants, 21 were missing sGPA (i.e., had not yet graduated at the time the GPAs were collected from the University) but had a junior-level GPA; for these, a regression using junior GPA to predict sGPA was performed ($r = 0.96$ between the two) and the resulting score was imputed. 22 participants had neither sGPA nor a junior GPA; these last were dropped, leaving the final N = 131 for target participants. Means and standard deviations for both the

dependent and predictor variables in this smaller sample were comparable to those of the larger group from which they were drawn.

Each participant provided contact information for two people who knew him or her best and would be willing to provide information about him or her. 127 participants in our target sample recruited the requested 2 informants, while 4 participants recruited only 1, for a total of 258 informants.

Measures

Traditional Predictors

Participants completed a release form granting access to their academic records; HSGPA and SAT scores were later obtained from the UCR Registrar's Office. The Registrar provided either an SAT score or an SAT score converted from an American College Testing (ACT) score. Only the total score (rather than the separate verbal/quantitative sub-scores) was used.

Personality

In order to assess traits at a global level, participants provided self-reports and informants provided peer ratings using the Big Five Inventory (BFI; John, Donahue & Kentle, 1991), which assesses extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. BFI-scale reliabilities and other psychometric properties have been shown to be similar to those of the much longer scales of Costa and McCrae's (1990) NEO-FFI (John, et al. 1991). Where two informants were available (all but 4 cases), a composite of their ratings was created by averaging the conscientiousness scale scores. Reliability of the averaged informants' conscientiousness rating was .59.

Academic performance

Cumulative fGPA and sGPA were collected from the campus Registrar. While the data collection phase of the original, larger project began a few years before the analyses completed for this study and all of the participants had progressed in their academic standing, not all of them had yet completed their senior year. Participants missing GPA data were handled as described above.

<div align="center">Results</div>

Analyses examined mean differences among ethnic groups and correlations between each of the potential predictors and the two outcome measures. A final set of analyses entered the predictor variables into hierarchical regressions predicting GPA.

Descriptive Statistics

Mean differences by ethnicity in HSGPA, SAT scores, and BFI scores were examined with one-way ANOVAs (see Table 1). Members of the different groups were admitted to UCR with approximately the same incoming HSGPA ($M = 3.51$) and very little variation ($SD = 0.37$), $F(4, 126) = 0.68, p = 0.609$. There was, however, a significant difference between ethnicities in their entering SAT scores, $F(4, 126) = 5.56, p = 3.7 \times 10^{-4}$, with Caucasians the highest and African Americans the lowest. As predicted, there were no significant differences in conscientiousness across ethnicities.

Correlations

There were no significant correlations between gender and any of the variables included in this study. HSGPA and SAT scores – the two traditional predictors – are only modestly related in this sample: $r(131) = 0.12$, n.s., indicating that they are independently capable of explaining variance in college GPA. sGPA, containing all the variance of fGPA, is thus well correlated with it, $r(131) = 0.68, p < .05$. Correlations between academic performance and the

hypothesized predictors of performance (HSGPA, SAT scores, and conscientiousness) are presented in Table 2[1]. While the traditional predictors are correlated with both fGPA and sGPA, conscientiousness shows a relationship with the outcome variables as well. While none of the predictor/freshman outcome relationships are significantly different from the predictor/senior outcome relationships, each of the predictor variables is more highly correlated with sGPA than with fGPA. The true utility of each predictor may be revealed increasingly towards the latter years of college; also, sGPA would be expected to be more reliable than fGPA, because it includes more data. While the relationship between GPA and self-reported conscientiousness is not statistically different from the relationship between GPA and informant-reported conscientiousness, a high self-rating on conscientiousness is less related to academic success than the assessment by one's acquaintances. In either case, these results support the hypothesis of a positive linear relationship between a student's conscientiousness and his or her GPA.

Regression

In order to assess the effectiveness of personality as a predictor of achievement, hierarchical regression analyses were performed on both fGPA and sGPA, with informant-reported conscientiousness entered last.

Predicting fGPA

The incremental utility of conscientiousness is illustrated in Table 3. Both SAT ($\beta = .23$, $p = .005$) and HSGPA ($\beta = .23$, $p = .006$) retain their predictive power at the final step, but conscientiousness ($\beta = .22$, $p = .007$) provides an extra 4.8% of variance, bringing this model's total percentage of variance explained up to 18.1%.

Predicting sGPA

As the bottom half of Table 3 indicates, the traditional and personality predictors result in a model that accounts for 37.7% of the variance in sGPA. Conscientiousness explains an additional 9.3% of the variance in sGPA above and beyond what is already claimed by the traditional predictors.

A further analysis examined whether conscientiousness remained a significant predictor of sGPA when fGPA was entered into the equation first. Table 4 demonstrates that while freshman performance is indeed a powerful predictor of senior performance ($\beta = .51, p = 3.33 \times 10^{-13}$), conscientiousness retains its predictive utility ($\beta = .20, p = .001$) even when entered after fGPA and the traditional predictors. This model accounted for 59.2% of the variance in sGPA.

<div align="center">Discussion</div>

Conscientiousness is related to success at all academic levels and is not unevenly distributed across ethnicities. It explains unique variance in GPA in both the freshman and senior years. Consistent with previous research (e.g. Chomorro-Premuzic & Furnham, 2003; Wolfe & Johnson, 1995), these results demonstrate that personality is a substantial predictor of performance in an academic environment. Further, the present study demonstrates that an acquaintance report of personality was predictive of a consequential outcome that was measured years later.

Limitations and Questions

One commonly-lamented shortcoming of psychological research is that it is too often based on college student participants; however, being that it is college students that are the focus of interest in this domain of research, this is perhaps a lesser concern than usual. Further, the campus from which these participants were drawn is unusual in its diverse composition:

Caucasian students were not the majority in our sample nor were they even the second most populous group.

It is conceivable that the predictive validity of the conscientiousness ratings was contaminated by the degree to which informants knew their acquaintance's GPAs and used this knowledge when making their ratings. While this possibility cannot be conclusively ruled out, past research has shown such judgments to be derived from a number of diagnostic cues (e.g., Funder & Sneed, 1993). Further reassurance is provided by the observation that the acquaintance's ratings were predictive of senior GPA, years after the ratings were made, even after the contemporaneous freshman GPA was controlled.

All conclusions regarding the admissions process based upon analyses of students who have been selected using this very process are subject to a problem of restricted range: since the HSGPAs and SAT scores of admitted students are necessarily higher and less variable than those who are not admitted (or who did not apply in the first place), the true relationship between these variables and GPA as an outcome measure is reduced. The same argument can be made, however, for the true relationship between conscientiousness and achievement: one can reasonably assume that the conscientiousness of a student who gets accepted to college is likely higher than that of students who do not or those who do not apply (on time, or at all) and that the true correlation between personality and performance would be higher, as well.

Is there a difference in the skills required to perform well at the freshman and senior levels? While ETS may generally assume that there is no gain in looking beyond the freshman year (Bridgeman, et al., 2000), this assumption is not supported by the present data: while conscientiousness provided a measure of incremental validity in the prediction of fGPA, the variance it explained nearly doubled for sGPA. Perhaps a student's freshman year is more

similar to his or her high school years than is their senior year, requiring a different set of skills (e.g., more essays are written than multiple choice tests taken, critical and free thinking skills are more strongly encouraged, and in many cases, attendance is not tracked such that students may come or go as they please). To the degree that this is true, conscientiousness may play a greater role in the latter environment. The regression reported including fGPA as a predictor of sGPA supports this hypothesis: while fGPA accounted for the largest portion of the variance in sGPA, conscientiousness remained a significant incremental predictor, explaining variance beyond what can be accounted for by freshman performance, high school grades, or SAT scores.

Conclusion

One implication of this research is that while multiple reports of personality may be more difficult to obtain than simple self-reports, the perspective they provide is invaluable, especially when personality variables are used to predict an outcome in which the self has a vested interest. A further implication is that a way should be found to include personality in the admissions process. SAT scores are useful for predicting student performance, but Table 1 indicates that they also serve to discriminate against protected classes of citizens. Table 2 suggests an alternative: conscientiousness predicts GPA as well as SAT scores do, but shows no mean differences across ethnicities. While the current system emphasizes the examination of what can be seen as a proxy for IQ (the SAT) and a proxy for past behavior (HSGPA), it seems clear that finding "good" students in an equitable manner is, as well, a function of personality.

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Footnotes

[1]Correlations between the other Big Five traits (extraversion, agreeableness, neuroticism, openness) and academic outcomes were not a focus of this study; however, they were examined as well. None of them showed a significant correlation with either fGPA or sGPA.

Table 1

Mean differences in variables predictive of GPA by ethnicity

Variable	Group Means (Standard Deviation)					F	η^2
	C	A	L	AA	O		
HSGPA	3.59_a (0.37)	3.48_a (0.38)	3.55_a (0.41)	3.44_a (0.37)	3.58_a (0.19)	0.68	0.02
SAT	1173_a (120.4)	1115_{ac} (151.2)	1032_{bc} (132.3)	981_b (165.7)	1069_{abc} (149.6)	5.56*	0.15
Conscientiousness							
Self-report	3.52_a (0.76)	3.43_a (0.63)	3.61_a (0.60)	3.87_a (0.67)	3.38_a (0.75)	1.68	0.05
Informant-report	3.59_a (0.80)	3.46_a (0.59)	3.67_a (0.63)	3.76_a (0.38)	3.61_a (0.53)	1.03	0.03

Note. C = Caucasian (n = 21), A = Asian (n = 57), L = Latino (n = 26), AA = African American (n = 17), O = Other (n = 10); N = 131

p < .001

Means for groups not sharing the same subscript differ significantly by Tukey's HSD at the .05 level.

Table 2

Correlations between predictors of academic achievement and academic outcomes

	1	2	3	4	5	6
1. HSGPA	---	0.13	0.27*	0.18*	0.30*	0.46*
2. SAT		---	-0.11	-0.06	0.25*	0.32*
3. Self-report conscientiousness			---	0.39*	0.17	0.14
4. Informant-report conscientiousness				---	0.25*	0.36*
5. Freshman GPA					---	0.68*
6. Senior GPA						---

$N = 131$; *$p < .05$

Table 3

Summary of hierarchical regression analyses on fGPA and sGPA

Predictor	R^2	R^2 Change	b	SE b	β	F
Freshman GPA	**.18**					
1) SAT	.06		7.04 x 10^{-4}	2.43 x 10^{-4}	.25*	F (1, 129) = 8.39*
2) SAT	.06		6.06 x 10^{-4}	2.36 x 10^{-4}	.21*	F (2, 128) = 9.88*
HSGPA	.13	.07	.33	1.0	.27*	
3) SAT	.06		6.58 x 10^{-4}	2.32 x 10^{-4}	.23*	F (3, 127) = 9.38*
HSGPA	.13	.07	.23	1.0	.23*	
Conscientiousness	.18	.05	.16	.06	.22*	
Senior GPA	**.38**					
1) SAT	.10		9.29 x 10^{-4}	2.39 x 10^{-4}	.32*	F (1, 129) = 15.09*
2) SAT	.10		7.73 x 10^{-4}	2.16 x 10^{-4}	.27*	F (2, 128) = 25.41*
HSGPA	.28	.18	.51	.09	.43*	
3) SAT	.10		8.47 x 10^{-4}	2.17 x 10^{-4}	.29*	F (3, 108) = 25.61*
HSGPA	.28	.18	.44	.09	.37*	
Conscientiousness	.38	.09	.23	.05	.31*	

*p < .01

Note. Values in bold text highlight the total variance explained by that model.

Table 4

Hierarchical regression analyses on sGPA including fGPA

Predictor	R^2	R^2 Change	b	$SE\ b$	β	F
Senior GPA	**.59**					
1) fGPA	.46		.68	.07	.68*	$F\ (1, 129) = 110.83$*
2) fGPA	.46		.59	.06	.59*	$F\ (2, 128) = 73.72$*
HSGPA	.54	.07	.34	.08	.28*	
3) fGPA	.46		.56	.06	.56*	$F\ (3, 127) = 53.09$*
HSGPA	.54	.07	.33	.08	.28*	
SAT	.56	.02	4.31×10^{-4}	1.75×10^{-4}	.15*	
4) fGPA	.46		.52	.06	.51*	$F\ (4, 126) = 45.63$*
HSGPA	.54	.07	.30	.07	.25*	
SAT	.56	.02	5.08×10^{-4}	1.71×10^{-4}	.17*	
Conscientiousness	.59	.03	.14	.04	.20*	

*$p < .01$

Note. The value in bold text highlights the total variance explained by that model.