

ACADEMIC ACHIEVEMENT AND PERSONALITY

Academic Achievement and Personality Traits: A Five-Factor Model
Assessment of African American College Students.

William Collins

University of Michigan

June, 1999

Abstract

The NEO Inventory was administered to a group of 68 African American college students who participated in a summer talent development program after graduating from high school, but prior to their full time enrollment in college. Scores obtained for each student on five personality traits as measured by the NEO Inventory were correlated with academic achievement measures such as high school grade point average (HSGPA), standardized test scores, and college first semester grade point average (FGPA). Using FGPA as the criterion measure, the personality and academic variables were employed in a Stepwise Multiple Regression analysis to assess their utility in predicting college academic achievement. The data were analyzed separately for males and females. Results showed that the traditionally used measures of HSGPA and test scores were not predictive of academic achievement for either males or females. The personality traits of Neuroticism and Agreeableness were predictive of achievement in males, while the trait of Openness was predictive of achievement for females. Findings are interpreted in light of the special population studied. Future research directions are discussed.

Academic Achievement and Personality Traits: A Five Factor Model
Assessment of African American College Students.

Colleges and universities traditionally have been concerned with developing talent for the future. While elementary and secondary education are concerned with providing the bases for full adult functioning in society, the mission of colleges and universities goes considerably further as they try to anticipate society's future needs and then endeavor to train the professionals, managers and leaders that will fill those needs. In the United States, the establishment of many colleges and universities was initially concerned with addressing the need to develop a learned clergy to serve an expanding population (Weinberg, 1977). But as the country itself expanded, colleges and universities soon were recognized as beneficial to upward mobility as well, leading ever-growing numbers of people to seek the unique credentialing opportunities provided by higher education. Examples abound and now manifest themselves in the programs of study that lead to degrees in business, education, engineering, law, medicine and pretty much everything else students can learn in college.

Over the last thirty years or so, one need that colleges and universities have sought to address has been the relative dearth of ethnic minority and economically disadvantaged students who had the opportunity to pursue their aspirations through higher education (Bowen and Bok, 1998). Numerous programs were started for this purpose, including federally mandated programs such as Upward Bound, or Special Services (TRIO), or state-mandated programs such Higher Educational Opportunity Program (H/EOP) in New York or ACT 101 program in Pennsylvania. Similar efforts exist in virtually every state. Selection to such programs, particularly at elite colleges and universities, often included a reliance on non-cognitive measures of achievement in addition to such traditionally used measures as standardized test scores or high school grade point average. As with any selection measure, there are some number of false positives and false negatives. That is, students selected for the program who do not meet expectations for

achievement (the false positives), and some unknown number of students not selected for the program who might have been successful in college (the false negatives). Those who are selected for such programs tend to be a rather homogeneous group; that is, there is usually little variation in selection measures by design. Such students tend to be selected for special educational opportunities precisely because their performance on selection criteria is within a rather narrow band. Sternberg (1995) has pointed out that even among students with the very best scores on standardized tests, such as those selected for graduate study, some will meet expectations, while others will not despite the fact that they had high test scores. An important question becomes how to maximize the selection. Expressed differently, of interest is *why* do some students fulfill expectations while others do not achieve the promise expected of them when admitted to a special program in higher education? Sternberg (1997) has suggested that while tests tend to measure academic-analytic abilities, other abilities, such as creative or practical abilities, might also contribute to the kind of success one experiences in school settings. The present study seeks to determine whether other characteristics, such as personality traits, may contribute something to success in school settings as well.

Observations on Student Academic Achievement

Since the mid-1960s, colleges and university enrollments have expanded dramatically. Part of this growth is a result of an increasingly technological society and the increased literacies it requires. But another important reason is the increased diversity of the student body, itself largely brought about by the passage of the 1965 Higher Education Act which provided financial aid for large numbers of students "previously underrepresented in higher education" (Cross, 1976). As a result, talented ethnic minority, low income, and female students who could not realistically have entertained notions of attending the best colleges in the country could now do so. At about the same time, researchers were identifying a variety of non-cognitive factors that seemed to affect college success, underscoring the limited power of standardized tests to predict college achievement (Gurin, et al, 1969; Sedlacek, 1972).

For over twenty years I have worked with "developmental" programs to promote student personal and academic growth. In general, the students in such programs are noteworthy because of their determination and their work ethic, despite or even because of prior disadvantage. Such characteristics are widely recognized by admissions officers who are eager to support the potential for outstanding

achievement as well as to reward prior accomplishment. Importantly, predicting academic success in college is far from an exact science. In fact, most recognize that college success is a broad mix of talent, preparation, effort and adjustment. Particularly at selective colleges, few students will succeed on the strength of talent alone, no matter how it is measured. Among the factors that have been identified with college are Sternberg's emphasis on creative and practical abilities as well as academic ability; Sadlecek's identification of a variety of non-cognitive factors that affect black students such as a realistic acknowledgment of racism and the presence of a support group. Steele suggested that efforts to reduce stereotype vulnerability were promising, while Collins has suggested participation in summer talent development programs is effective.

To what extent are personality traits important to college success? Gough's (1987) Achievement via Independence trait was found to be predictive of college-level academic achievement and was significantly correlated with the Openness scale of the NEO inventory (McCrae, Costa and Piedmont, 1992). Similarly the Conscientiousness scale of the NEO inventory is thought to be related to such characteristics as organization, purposefulness, and persistence, traits found to be correlated with higher academic achievement (Digman & Takemoto-Chock, 1981). "Conscientious people consider themselves, and are rated by others as being, more intelligent" (McCrae and Costa, 1987).

Personality is usually taken to refer to relatively enduring predispositions to respond in similar ways across situations. For example, a talkative person is apt to be so whether in familiar settings, such as with friends at home, or in novel settings such as sitting next to a stranger on an airplane. Are there personality traits that seem particularly relevant to meeting college demands? Attendance at a college or university often requires one to be open to new experiences as well as open to new or different interpretations of social values. The demands of college usually require the student to be organized and conscientious about completing assignments. The successful college student also has to be independent enough to manage time and social obligations effectively. The demands of college themselves are often a source of stress or anxiety, yet some people seem to be more anxiety prone than others. Is a trait of nervousness related to academic achievement, perhaps as a result of how one reacts to examinations or other forms of evaluation? These are some of the kinds of questions that might be asked about a possible relationship between particular personality traits and success in college.

A number of factor analytic studies have identified five traits that are found with some consistency to represent the domain of personality (Norman, 1963; Goldberg, 1981, 1990; McCrae and Costa, 1987; McCrae, 1992; Botwin and Buss, 1989; Costa and McCrae, 1988, 1992). The Five Factor model of personality maintains that a core of five traits are representative of personality. The five factors are listed below along with a brief characterization of each:

Extraversion - characterized by sociability, affection, friendliness, warmth, and boldness.

Neuroticism - characterized by worrying, nervousness, insecurity and self-consciousness

Agreeableness - characterized by good naturedness, helpfulness, and trust

Conscientiousness - characterized by carefulness, neatness, organization, and reliability

Openness - characterized by creativity, curiosity, independence, and liberalness

Costa and McCrae (1992) have developed the NEO Inventory as a means of measuring the "big Five" personality traits. The NEO has been applied in a number of settings including its use in psychotherapy, counseling, career development/advising, and in academic settings. The NEO was developed for use with adult populations and works equally well with college students (Costa, McCrae, & Dembrowski, 1989).

The basic conclusion of many knowledgeable observers is that individual differences along noncognitive dimensions such as, but not limited to, those mentioned above are at least as important to college adjustment and achievement as are such cognitive measures as standardized test scores. In many instances noncognitive factors are perhaps more important (Phiefer & Sedlacek, 1974; Steele, 1997). Should personality traits be included among the noncognitive factors that may influence college adjustment and success? The purpose of the present study is to explore whether personal characteristics might provide a useful adjunct to such traditional measures as standardized test score or high school grade point average in predicting college success.

As such, the Five Factor Model of personality provides a framework for identifying personal characteristics (i.e., personality traits) which may be explored to determine their relationship to academic success.

Subjects

African-American students who participated in a special summer program designed to develop academic skills and general self-efficacy served as subjects for this study and consisted of a total of 56 females and 17 males. All such students had graduated from high school and participated in the talent development summer program prior to their matriculation as college freshmen in the ensuing fall term. The students had a mean age of 17.6 years with a standard deviation of .59.

Method

Each student was administered the NEO Inventory in a classroom setting which was then scored according to instructions in the NEO Manual to produce factor scores on each of the five personality traits for each student. Academic achievement data, such as standardized test scores and grade point averages for both high school and college, were compiled for each student.

Analyses

Correlations between personality traits and academic achievement measures were calculated. Multiple Regression analyses were performed using college FGPA as the dependent measure and scores for personality traits, standardized tests, and HSGPA as predictors.

Results

The NEO is scaled separately for males and females, so the results for males and females generally will be reported here separately as well. Figures 1 and 2 show the relationship between HSGPA and Test Score (standardized), respectively, for male and female students. HSGPA is seen to have a moderate, but statistically insignificant positive correlation with FGPA for females ($r = .27$), and a moderate, but statistically insignificant negative correlation with FGPA for males ($r = -.37$). These relationships are reversed for the correlations between FGPA and test score. That is, females are seen to have a modest and statistically insignificant negative correlation between FGPA and test score ($r = -.10$), while males had a moderate, but statistically insignificant positive correlation between FGPA and test score ($r = .26$).

Table I shows the means and standard deviations for students on five personality traits as measured by the NEO and on academic achievement variables of HSGPA, Test Score, and FGPA. There were no statistically significant differences between males and females on the scale scores for the personality traits. However, when the scale scores were standardized, there was seen to be a statistically significant difference between males and females on the Neuroticism scale with females scoring higher ($p < .05$). On the academic achievement variables, there was no difference between males and females of standardized Test Score, but females did have statistically higher HSGPAs ($t=2.13$; $df=66$; $p < .05$). The difference between males and females on FGPA approached significance ($p < .06$) with females having a higher mean FGPA than males.

Table 2 shows the Pearson correlation coefficients for FGPA with the academic achievement measures (HSGPA and Test Score) and the five personality traits. (Correlation coefficients for males are below the diagonal while the correlation coefficients for females are above the diagonal.) It is seen that for males the only significant correlation is between FGPA and score on the Neuroticism scale. For females a significant correlation was found between FGPA and HSGPA and between FGPA and the Openness scale.

Using FGPA as the dependent variable, Stepwise Multiple Regression was employed to gauge the relative predictive power of the academic achievement measures and scores on the five personality traits. For males, scores on the Neuroticism scale and on the Agreeableness scale were significant predictors of FGPA. For females, HSGPA and score on the Openness scale were significant predictors of FGPA. Table 3 summarizes the results of the Multiple Regression Analysis for both males and for females.

Discussion

Traditionally, prior academic achievement has been the principle measure for predicting future academic achievement. Indeed, grades in school have been the main evaluation tools used for purposes of passing students from one grade level to the next and for gauging probable success in post-secondary educational settings. More recently, beginning about 1947 in the United States, standardized tests have been used as an indispensable measure of college readiness. Nevertheless, some portion of students with impressively high test scores and pre-college grades and who are admitted to college based on such indices

are observed to fail. Conversely, some portion of other students, with less impressive credentials, are observed to succeed in college. For the African American students in this study, basic personality characteristics may play a role in how well they adjust to the college environment as well as how they perform academically in it as measured by FGPA.

Of particular interest in the current study is the finding that standardized test score was not predictive of academic achievement for this select group of students. In some respects, such a finding merely serves to confirm the decisions of admissions officers who place added weight on the personal characteristics of students when making the college admission decision for this select group of students. But the relatively weak predictive power of standardized tests in gauging the academic achievement of the more general college population (Collins, 1998) of students also raises questions about its usefulness for that purpose. That is, in a given college, such tests rarely account for even ten percent of the variance in academic achievement. As students on my campus are known to say, "talent alone is insufficient for academic success." Students themselves seem to recognize that personal characteristics carry substantial weight when it comes to juggling the numerous demands of college which include both academic and non-academic pressures. The present study suggests that for black students, basic personality traits may provide a useful explanation for some of the observed differences in academic achievement in college students and that such an explanation is substantially more robust than either HSGPA or test score can provide. But even so, certain personality traits may augur different conclusions for male students than for female students.

Females outnumbered males by about three-to-one in this study and the number of males was rather small ($n=17$). Nevertheless, the findings are particularly strong for the males. Neither HSGPA nor standardized test score was a significant predictor of academic achievement for the African American male students in this study. However, of the five personality traits examined, both Neuroticism and Agreeableness were found to be significant predictors of academic achievement. Low scores on Neuroticism and on Agreeableness were associated with high academic achievement. Together, these two variables alone accounted for approximately one-half the variance in FGPA when used in a Stepwise Multiple Regression model. This may be compared to less than ten percent of the variance being accounted for by HSGPA and Test Score for the entire freshman class of over 5,000 students at the institution where the subjects of this study attended. Such findings may suggest that the males in the study who performed

well were reasonably well-adjusted and relatively free of anxiety and worry, allowing them to invest more energy and focus on academic matters. Those high on Neuroticism may have been preoccupied with anxiety-producing matters and as a result may have had less cognitive capacity to devote to academic demands. Similarly, those low on Agreeableness may have been less willing to be distracted by competing social or other events that could have drawn them away from academic work.

As was the case for male students, the traditional academic measures of HSGPA and Test Score were not significantly predictive of achievement in females. Among the personality traits measured, only the Openness dimension was predictive of achievement for females. Female students who scored lower on the Openness scale tended to perform better academically than those who scored higher on the Openness scale. Indeed, Openness was the only variable predictive of female academic achievement, accounting for about twelve percent of the variance in FGPA, based on the Stepwise Regression model that employed both the five personality traits and the two academic measures of HSGPA and Test Score. The Openness scale is thought to be related to intelligence and to the goal of education generally, so the finding that female students who scored higher on Openness tended to earn lower FGPA's was something of a surprise. Perhaps the lower scores on Openness suggests that females in this study were less willing to venture into new, uncharted arenas and as a result remained focused on immediate and familiar objectives such as course work. That is, such students may have been skeptical about the very kinds of new experiences available to college students that could prove to be not only distractions, but destructive as well, such as experimentation with illicit drugs or attending unfamiliar off-campus parties.

Previous research had found some evidence that the Conscientiousness scale was related to academic achievement (Digman & Takemoto-Chock, 1981), but no such evidence emerged for students in this study. However, certain personality traits were found to be significantly related to academic achievement, and in some cases were considerably more predictive of achievement than the traditional measures of HSGPA and standardized test score. Thus, this study is also suggestive of future avenues of research including the reliability of the personality measures for this population, their consistency with observer ratings of their personality traits, and the relationship of traits to classroom behaviors. It is also possible that college academic achievement is mediated by such other factors as whether or not a student holds a job, how satisfied the student feels about the college experience generally, teacher attitudes about

the student, or the availability of a support network. Exploration of such questions may provide a more complete explanation of college student academic achievement as well as offering additional insights that may complement traditional measures of achievement.

References

- Allen, W. (1992) The Color of Success: African American College Student Outcomes at Predominantly White and Historically Black Public Colleges and Universities. Harvard Educational Review, 62(1):26-43.
- Bowen, G. B. & Bok, D. (1998) The Shape of the River: Long-Term Consequences of Considering Race in College and University Admissions. Princeton, NJ: Princeton University Press.
- Costa, P. T. & McCrae, R. R. (1992) Revised NEO Personality Inventory (NEO PI-R) and NEO Five-Factor Inventory (NEO-FFI) Professional Manual. Odessa, FL: Psychological Assessment Resources, Inc.
- Costa, P. T., McCrae, R. R., & Dembrowski, T. M. (1989) Agreeableness vs. antagonism: Explication of a potential risk factor for CHD. In A. Seligman & T. M. Dembrowski (Eds.), In search of coronary-prone behavior: Beyond Type A (pp. 41-63). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Digman, J. M. & Takemoto-Chock, N. K. (1981). Factors in the natural language of personality: Re-analysis, comparison, and interpretation of six major studies. Multivariate Behavioral Research, 16, 149-170.
- Hood, D. W. (1992) Academic and noncognitive factors affecting the retention of black men at a predominantly white university. Journal of Negro Education, 61(1):12-23.
- McCrae, R. R., Costa, P.T., and Piedmont, R. L. (1992). Folk concepts, natural language, and psychological constructs: The California Psychological Inventory and the five-factor model. Journal of Personality.
- Norman, W. T. (1963) Toward an adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. Journal of Abnormal and Social Psychology, 66, 574-583.

Pfiefer, C. M. & Sedlacek, W. E. (1974). Predicting Black Student Grades with nonintellectual measures. *Journal of Negro education*, 43(1), 67-76.

Sedlacek, W. E. (1976) Racism in American Education: A Model for Change. Chicago: Nelson-Hall.

Steele, C. A Threat in the Air: How Stereotypes shape intellectual identity and performance. American Psychologist, 52(6), 613-629.

Sternberg, R. J. Wagner, R. K., Williams, W. M., & Horvath, J. A. (1995). Testing common sense. American Psychologist, 50(11), 912-927.

Sternberg, R. J. & Williams, W. M. (1997). Does the *Graduate Record Examination* predict meaningful success in the graduate training of psychologists? A case study. American Psychologist, 52(6), 630-641.

Weinberg, M. (1977) Minority Students: A Research Appraisal. Washington, DC: Superintendent of Documents, U.S. Government Printing Office. U.S. Department of Health, Education and Welfare, National Institute of Education.

Table 1 - Means and standard deviations for African American college students on academic achievement measures and on five personality traits.
 (Test Score is the SAT standardized to the national population; scores on the personality traits are reported as scaled T-scores with a mean of 50 and standard deviation of 10)

	HSGPA	Std. Test Score	Agreeableness	Conscientiousness	Extraversion	Neuroticism	Openness	FGPA
Males (n=17)								
Mean	2.9	-.39	50.1	50.6	53.3	48.9	49.8	2.2
s.d.	.36	.54	10.3	11.1	11.1	7.5	9.9	.59
Females (n=51)								
Mean	3.1	-.36	46	47.3	52.3	50.4	51.9	2.6
s.d.	..41	.60	13.1	11.9	12.5	9.7	10.2	.69

Table 2 - Correlation Coefficients Between Academic Achievement Measures and Personality Trait Scores for African American College Students.

Correlation Coefficients for males (n=17) below the diagonal
 Correlation Coefficients for females (n=51) above the diagonal

	HSGPA	Test Score	Agreeableness	Conscientiousness	Extraversion	Neuroticism	Openness	FGPA
HSGPA		-.52	.07	.45	-.26	-.15	-.18	.27
Test Score	.33		.18	-.44	.12	-.09	.34	-.10
Agreeableness	.17	-.27		.31	.37	-.21	.04	-.07
Conscientiousness	.28	-.26	.39		.23	-.41	-.25	.03
Extraversion	-.16	.33	-.14	-.03		-.11	.22	-.16
Neuroticism	.17	-.09	-.28	-.16	-.57		.06	.14
Openness	-.58	.19	-.12	-.31	.42	-.17		-.35
FGPA	-.39	.26	-.34	-.13	.26	-.54	.15	

(boldface indicates $p < .05$)

Table 3 - Summary of Stepwise Multiple Regression Analysis Using FGPA as Dependent Variable with Academic Achievement and Personality Traits as Predictors.

Males

<u>Variables in Model</u>	<u>Standardized B</u>	<u>t</u>	<u>Sig.</u>
Neuroticism	-.69	-3.72	.002
Agreeableness	-.54	-2.91	.011

R=.746; R²=.49 (F=8.79; df = 2,14; p<.01)

(variables not in model: HSGPA, Test Score, Conscientiousness, Extraversion, Openness)

Females

<u>Variables in Model</u>	<u>Standardized B</u>	<u>t</u>	<u>Sig.</u>
Openness	-.35	-2.61	.012

R=.35; R²=.12; (F=6.82;df = 1,49; p<.02)

(variables not in model: HSGPA, Test Score, Agreeableness, Conscientiousness, Extraversion, Neuroticism)

Fig. 1 - Regression of FGPA on HSGPA

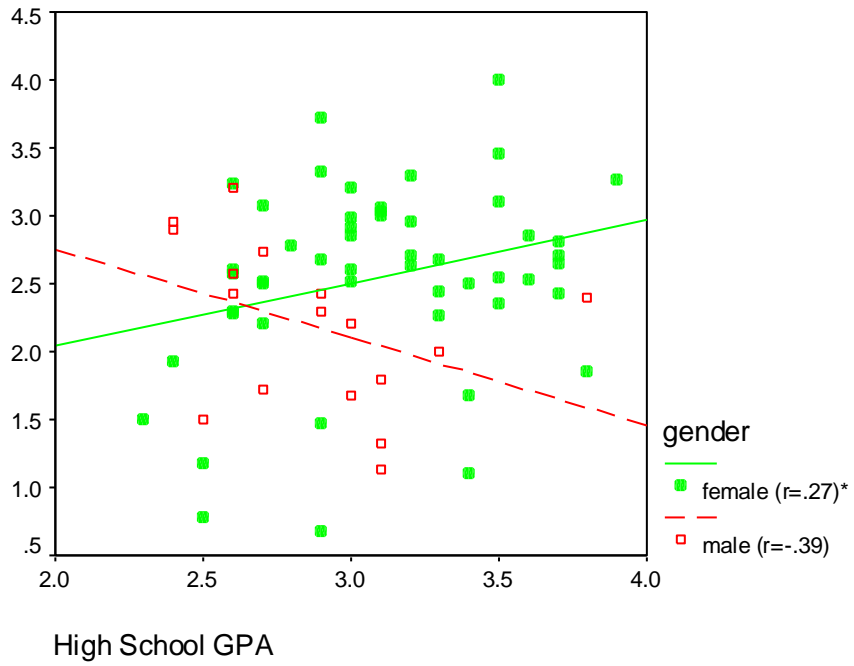


Fig. 2- Regression of FGPA on
Test Score (standardized)

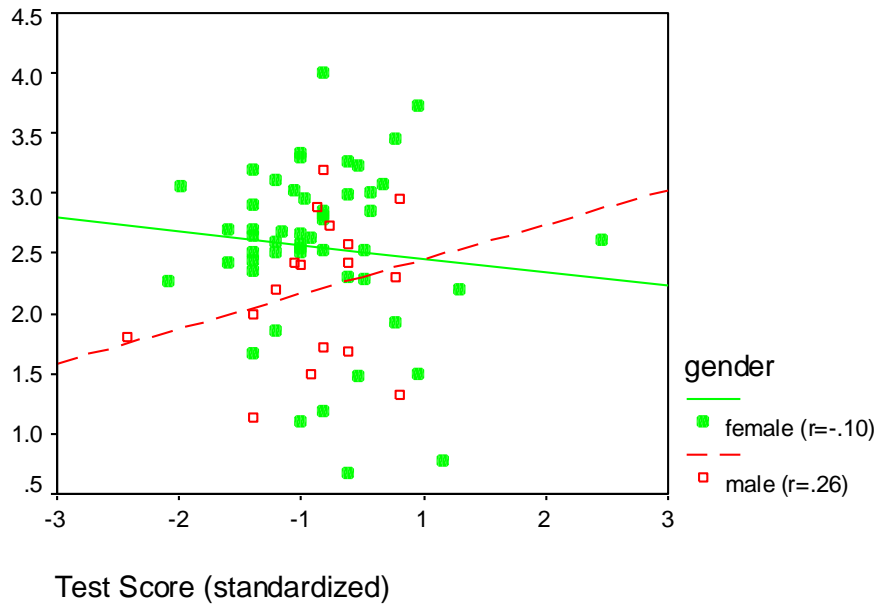


Fig. 3 - FGPA by Agreeableness

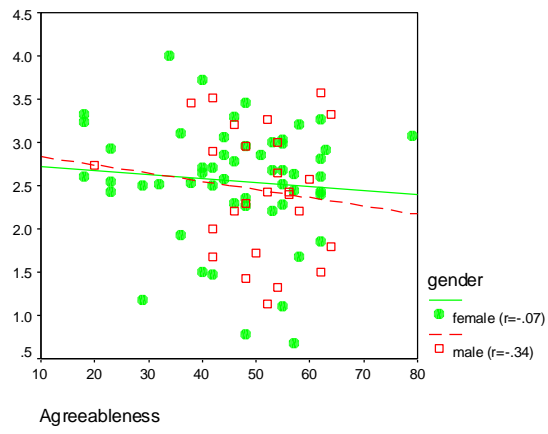


Fig. 4 - FGPA by Conscientiousness

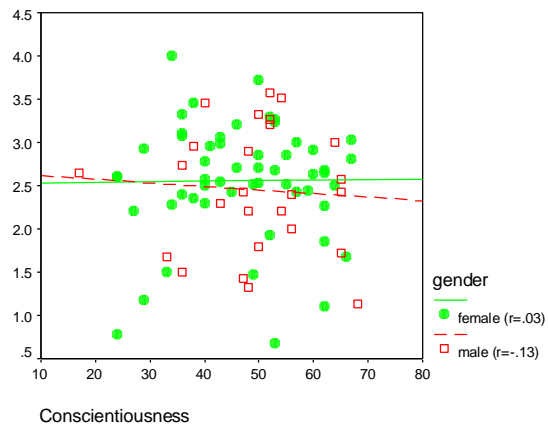


Fig. 5 - FGPA by Extraversion

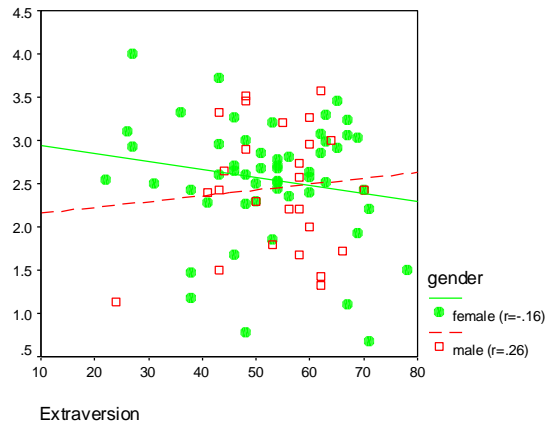


Fig. 6 - FGPA by Neuroticism

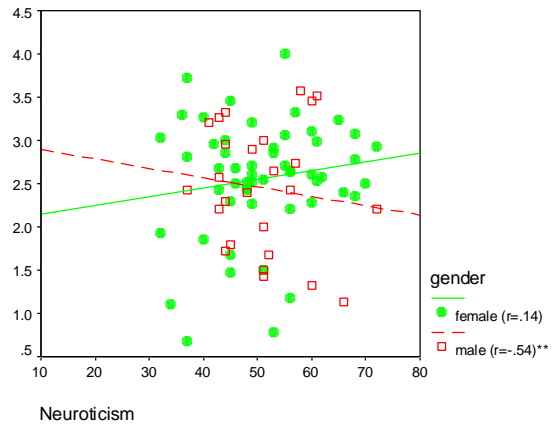


Fig. 7 - FGPA by Openness

