7-1986

Analysis of Academic Achievement and Personality Traits of Adult and Traditional College-Age Subjects

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Analysis of Academic Achievement and Personality Traits of Adult and Traditional College-Age Subjects

A Thesis

Presented to the

Department of Teacher Education

and the

Faculty of the Graduate College

University of Nebraska

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

University of Nebraska at Omaha

by

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July, 1986

THESIS ACCEPTANCE

Accepted for the faculty of the Graduate College, University of Nebraska, in partial fulfillment of the requirements for the degree (Master of Arts), University of Nebraska at Omaha.

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July 18, 1986

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Table of Contents

Tables

Abstract

What was the relationship between personality traits and academic achievement? This study was designed to answer this question by surveying a group of 77 students enrolled in developmental reading classes in a junior college. Subjects completed a self-report personality test which measured eight personality traits and a measure of inherent aptitude. Achievement was measured by criterion referenced tests. Bivariate and multivariate correlations between measures of personality and measures of achievement were examined separately according to race, gender, and age (under 25 versus over 25 years). Results indicated that Vigor was the only personality trait which significantly correlated with achievement; however, significant relationships between personality traits and other kinds of variables emerged. A highly significant correlation between Ascendency and Race could have future implications for equally proportioning classes in terms of minority/majority students. Implications for instructors and administrators at the college level, particularly vis-a-vis older, non-traditional and minority students, were discussed.

Analysis of Academic Achievement and Personality Traits of Adult and Traditional College-Age Subjects

Educators, admissions officers, and counselors have long been interested in finding ways of predicting and enhancing student achievement. Such information could be used by counselors and administrators to develop precollege workshops for remedial activities, to provide career counseling workshops at the college or high school level, and to determine curricular direction in long-range plannning. Furthermore, this information could be used by teachers to more effectively plan and implement classroom strategy. Extensive intelligence and aptitude variables have long been used as educational tools; however, only relatively recently has consideration been given to the possible involvement of such nonintellective variables as personality traits. As Fraze (1984) suggested, the personality of the learner has important implications for education; once teachers become aware of the ways in which personality and instruction interact, they may be better able to design instruction to meet the individual needs of the students.

Are there significant correlations between certain personality traits and academic achievement? That is, are certain personality traits exhibited by high achievers, others by underachievers, or still others by students who fall in the middle?

Self- Esteem and achievement

Considerable research exists which has examined the relationship between academic achievement and specific personality traits. In particular, the relationship between self-esteem and academic achievement has often been the subject of research studies (Biaggio & Pelofski, 1984; Clark, 1984; Fung, 1984; Johnson, 1984; Keefer, 1971; Lay & Wakestein, 1985; Priddle, 1984; Tunney, 1984). Interestingly, the results of these studies often yielded mixed or contradictory results: (a) Biaggio & Pelofski (1984) found a correlation between achievement and self-esteem for males, but not for females; (b) Clark (1984) found no relationship between self-esteem and reading achievement; (c) Fung (1984) found a positive relationship between self-esteem and achievement in her study which involved normal and disabled readers; (d) Johnson found no correlation between self-esteem and achievement for either traditional or reentry college women; (e) Lay & Wakestein (1985) found that black students exhibited greater self-esteem than did white students who were on an equal level of achievement; (f) Priddle (1984) found a definite

relationship between self-esteem and reading achievement. Perhaps, this conflicting evidence is further complicated by the theoretical debate over whether self-esteem affects academic achievement or whether academic achievement affects self-esteem. Also, as Lavin (1965) suggested, the relationship between nonintellective variables and academic achievement may exist only in specific instances, i.e. in specific content areas or with specific student groups.

Use of the Myers-Briggs Type Indicator

Many studies which have examined the relationship between personality traits and achievement have utilized the Myers-Briggs Type Indicator (Nisbet, Ruble & Schurr, 1982; Robyak & Downey, 1979; Robyak & Patton, 1977; Thomason, 1983), a self-report personality inventory based on Jung's personality typology consisting of four scales: (a) Extroversion-Introversion; (b) Sensation-Intuition; (c) Thinking-Feeling; (d) Judging-Perceiving. The Myers-Briggs Type Indicator (MBTI) has proven effective in improving the prediction of GPA (Nisbett, Ruble, & Schurr, 1982), identifying underachieving and nonunderachieving students (Robyak & Downey, 1979), examining post-course use of skills (Robyak & Patton, 1977), and in predicting reading comprehension scores (Thomason, 1983).

Personality traits found to correlate with achievement

Self-esteem and the traits measured by the MBTI have been, by no means, the only personality traits examined by

researchers attempting to find the elusive link which may help predict or enhance achievement. Many dimensions of personality have been studied, and the results obtained have been varied. For example, several studies found no significant relationships between academic achievement and various dimensions of personality: (a) Barney, Frederick, & Fredericks (1984) found no relationship between academic achievement and social responsibility, anomy, or stress anxiety; (b) Crawley & Trout (1985) found no relationship between achievement and field independence-dependence or internal-external locus of control in their study which matched students' personality traits to specific instructional strategies; (c) Ho & Spinks (1985) obtained no significant correlations between personality traits and academic achievement as measured by GPA in their study which examined authoritarianism, rigidity, conformity, dogmatism and fatalism-superstition in relation to achievement.

Conversely, mixed results were obtained by several researchers: (a) Carsrud, Olm, & Thomas (1984) obtained mixed results in their correlational study which examined the relationship between achievement and interpersonal competitiveness, personal unconcern, verbal aggressiveness, instrumentality, expressivity, hositility, need for power, and the need for influence; (b) Engel examined confidence and cautiousness in relation to achievement for adult learners and obtained mixed results; (c) Schneider & Overton

(1983) obtained mixed results concluding that the Holland Personaltiy Types had some predictive value for achievement for males only.

Finally, many research studies have obtained definite significant correlations between various dimensions of personality and academic achievement. For example, DeBoer (1981) found a significant relationship between persistence and academic achievement. Enke (1983) also found significant relationships in a study which examined the interactive effects of attitude, dogmatism and content upon reading achievement. Hungerman & Schwertfeger (1985) found a significant correlation between trait anxiety and achievement, and Judd et al. (1985) examined endurance, cognitive structure, order, play change and impulsivity scales for students who experienced academic success and students in academic difficulty and obtained signficant correlations.

This inconsistency and lack of strong relationships could be the result of several factors: (a) failure to isolate enough of the right variables; (b) measurement error in the predictors; (c) uncontrolled variation in grades (measures of achievement) themselves; (d) failure to consider ability, sex, socioeconomic status; or (e) failure to consider differences in curricular areas (Lavin, 1967). The proposed study was designed to correct these flaws by controlling each of the variables.

Research Concerning Adult Learners

In addition, most of the research examining the relationship between personality traits and achievement focused on traditional student populations rather than adult learners (Hayes, 1984; Keefer, 1971; Marks, 1984; Priddle, 1984). Little attention has been given to the adult learner or reentry college student, a growing population of students. Research has suggested that adults may have different motivations and expectations for learning than do traditional students, may require different learning strategies, and may respond differently to classroom pressures (Zempke & Zempke, 1984; Whaples, 1979). Skruber (1982)
maintained that learning for adults must deviate from the traditional college classroom and become student-directed rather than teacher-directed. Clearly, adult learners have different needs and require different treatment. Do adult learners, then, exhibit different personality traits than traditional students? Are certain personality traits of adult learners related to academic achievement?

Although research examining the relationship between personality traits and achievement among adult learners is scant, a few studies have examined this relationship. Johnson (1984) examined the effects of personality correlates on achievement in traditional and reentry college

women and found that reentry women had a higher degree of assertiveness, were more liberal in feminist attitude, were less external in locus of control, were less competitive, and were less concerned with the negative reactions of others. Engel (1981) found prior knowledge had the possibility of making an adult learner more cautious; however, this cautiousness did not adversely affect achievement in a prose learning task. Engel also found that adult learners were as confident as traditional students in approaching difficult tasks. Using the MBTI to examine the relationships of chronological age, psychological type, and reading achievement, Thomason (1983) found no evidence that would suggest that age was a factor in determining the relationship between personality traits and achievement. Clearly, additional research in this area is needed.

The purpose of this study was to compare relationships between academic achievement and several personality factors found among adult versus traditional college-age learners. The study was designed specifically to compensate for several of the most common flaws found in similar research studies.

Method

Subjects

Subjects were a sample of 77 volunteers enrolled in developmental reading classes at Metro Technical Community College in Omaha, Nebraska. Aptitudes, age and sex were left free to vary. The population was not evenly proportioned in terms of race or gender (i.e., 25% Caucasion, 75% Black; 68% female, 32% male). The Mean age was 27.3 years (SD = 8.18 years) with a miminum age of 17 years and a maximum age of 54 years. Forty-four percent of the population was older than 25 years and 56% was 25 years or younger.

Instruments

Three instruments were used to collect data for this proposed study:

1. Gordon Personal Profile-Inventory (Gordon, 1978): Consists of sets of four descriptive phrases, each such set being known as a "tetrad." Each of the eight personalitiy traits is represented by one of the descriptive phrases, or items, in each tetrad. Of the four, two phrases are of similar high-average preference value and two are similar low-average preference value. Respondents are asked to mark one item in each tetrad as being most like themselves and one as being least like themselves. Thus, the individual

must make what, in effect, is a three-level ranking within each set of four items. This forced choice format is believed to be less susceptible to distortion by individuals who are motivated to make a good impression than questionnaires employing a single-item format. A sample question might be as follows:

	most	least
a good mixer socially	____	_____
lacking in self confidence	____	_____
thorough in work undertaken	____	_____
tends to be emotional	____	_____

The eight subscales of the GPP-I are defined as follows:

Ascendancy. High scores characterize individuals who are verbally ascendant, who adopt an active role in the group, who tend to make independent decisions, and who are self-assured in relationships with others. Those who play a passive role in the group, who listen rather than talk, who lack self-confidence, who let others take the lead, and who tend to be overly dependent on others for advice, normally make low scores.

Responsibility. Individuals who are able to stick to the job assigned them, who are perservering and determined, and who can be relied on generally score high on this scale. Individuals who are unable to stick to tasks that do not

interest them and who tend to be flighty or irresponsible typically make low scores.

Emotional Stability. High scores on this scale are generally made by individuals who are emotionally stable and relatively free from worries, anxieties, and nervous tension. Low scores are associated with excessive anxiety, hypersensitivity, nervousness, and a low frustration tolerance. A very low score generally reflects poor emotional adjustment.

Sociability. High scores typify individuals who like to be with and work with people and who are gregarious and sociable. Low scores reflect a lack of gregariousness, a general restriction in social contacts, and, in the extreme, an actual avoidance of social relationships.

Cautiousness. Individuals who are highly cautious, who consider matters very carefully before making decisions, and who do not like to take chances or run risks, typically make high scores on this scale. Those who are impulsive, who act on the spur of the moment, who make hurried or snap decisions, who enjoy taking chances, and who seek excitement, normally score low on this scale.

Orginal Thinking. High scoring individuals generally like to work on difficult problems, are intellectually curious, enjoy thought-provoking questions and discussions and like to think about new ideas. Those who score low dislike working on difficult or complicated problems, do not care

particularly about acquiring knowledge, and are not interested in thought-provoking questions or discussions.

Personal Relations. High scores typify those individuals who have faith and trust in people and who are tolerant, patient, and understanding. Low scores reflect a lack of trust or confidence in people and a tendency to be critical of others and to become annoyed or irritated by what others do.

Vigor. High scores on this scale characterize individuals who are vigorous and energetic, who like to work and move rapidly, and who are able to accomplish more than the average person. Low scores are associated with low vitality or energy level, a preference for setting a slow pace, and a tendency to tire easily and to be below average in terms of output or productivity (Gordon, 1978).

Coefficient alpha reliabilities for the GPP-I indicated the following reliability coefficients for each personality trait: ascendency = .86; responsibility = .87; emotional stability = .87; sociability = .87; cautiousness = .83; original thinking = .79; personal relations = .83; vigor = .84.

2. Tests of Adult Basic Education (TABE) (Tiegs & Clark, 1976): Used as a measure of aptitude to control achievement for aptitude. The reading comprehension section contains 45 multiple choice questions. The first six items measure reference skills. The remaining 39 items, based on

four reading passages, measure the student's ability to recall specific facts presented in the passages, to understand main ideas, and to make reasonable inferences. The TABE is adapted from and equated to the Califoria Achievement Tests, 1970 edition.

The reliability of the TABE was evaluated by computing coefficient alpha (KR-20 = .91).

3. Criterion Referenced Tests (Niles & Tuinman, 1977): Mastery tests constructed to test achievement of the objectives or goals of instruction. The midterm criterion referenced test was used to measure achievement.

The reliability of each mastery test was evaluated by computing coefficient alpha (KR-20 = .68).

The TABE was given before the quarter began by qualified college personnel. The GPP-I was given to each class as a group by the researcher within the first half of the quarter. The achievement tests was given midterm by the classroom instructor.

Data Analyses

Scores on each test were computed for each subject. Demographic variables were coded as follows: Sex (1 = male, 2 = female); Race, (1 = Caucasion, 2 = Black); Age (1 = under 26 years, 2 = over 25 years). Age was also treated as a continuous variable for computing Pearson correlatons. Several 3-way analyses of variance were also conducted: Factors = Sex X Race X Age. The respective criteria in

these ANOVA consisted of scores on each personality scale and the achievement test (controlled for aptitude).

Results

Separate correlation matrices were computed for each sex, race, and age group and were statistically compared via Box's M. Since all tests were N.S., data from all subjects were pooled into a single correlation matrix which appears in Table 1. The correlation between the aptitude and achievement tests was .32 ($p. < .01$). Using this correlation, a regression equation was constructed to partial-out variance from the achievement scores that could be attributed to aptitude. All of the statistical tests described below were conducted using the residual variance in achievement tests scores.

Several multiple regression analyses were conducted, predicting achievement test scores (controlled for aptitude) from personality tests: first using data from all subjects, then using data from subjects broken down according to Sex, Race, and Age. No equations emerged with more than a single significant predictor. Thus, the bivariate correlations displayed in Table 1 constituted the only significant relationships of interest between personality and achievement. The results of the 3-way ANOVAs appear in Table 3. Means and standard deviations corresponding to the significant effects appear in Table 2.

Table 1

Pearson Correlations

(N = 77)

	Aptitude	Achievement (Raw)	Achievement (Controlled for (Aptitude)[a]	Sex[b]	Race[c]	Age
Gordon Personality Profile						
Ascendency	.16	.02	-.03	-.14	.28**	-.03
Responsibility	.14	.13	.09	-.06	-.04	.19*
Emotional Stability	.22*	.20*	.14	-.24**	.14	-.02
Sociability	.02	.08	.08	-.04	-.01	.12
Cautiousness	.05	.13	.12	.06	-.07	.36**
Original Thinking	.13	.17	.14	-.07	.07	.14
Social Relationships	.08	.05	.02	-.08	-.27**	.16
Vigor	.06	.23*	.22*	-.02	.04	.24**

* p. < .05

** p. < .01

[a]Parameters for the regression equation predicting achievement scores from aptitude scores: beta weight = .073, constant = 15.67, r. = .32 (p. < .01)

[b]Sex coded as follows: 1 = male, 2 = female

[c]Race coded as follows: 1 = Caucasion, 2 = Black

Table 2

Means and Standard Deviations

Variable	Significant Contrasts	Group n.	Mean	(SD)
Ascendency	Caucasion	19	16.79	(5.45)
	Under 26 years	11	18.55	(3.33)
	Over 25 years	32	19.50	(7.01)
	Black	58	19.83	(4.17)
	Under 26 years	8	14.38	(4.30)
	Over 25 years	26	20.23	(4.06)
Emotional Stability	Males	25	23.40	(4.22)
	Females	52	21.37	(3.81)
Sociability	Caucasion			
	Under 26 years	11	21.82	(5.12)
	Over 25 years	32	18.50	(4.21)
	Black			
	Under 26 years	8	16.38	(3.82)
	Over 25 years	26	20.46	(4.12)
Personal Relationships	Males			
	Under 26 years	14	20.93	(3.36)
	Over 25 years	11	23.82	(4.51)
	Females			
	Under 26 years	29	22.31	(4.18)
	Over 25 years	23	20.39	(4.16)

Table 2 Continued

Variable	Significant Contrasts	Group n.	Mean	(SD)
	Caucasion	19	23.68	(3.82)
	Black	58	21.05	(4.12)
Aptitude	Males	25	56.80	(15.14)
	Females	52	48.87	(12.68)
Responsibility	None	77	23.32	(3.93)
Cautiousness	None	77	21.79	(4.68)
Original Thinking	None	77	22.57	(4.06)
Vigor	None	77	22.06	(4.85)
Achievement (controlled for aptitude	None	77	0.00	(3.07)
Achievement (raw)	None	77	19.43	(3.23)

Table 3

THREE-WAY ANOVAs

Dependent Variable	MS Error	D.F.	Effect Tested	MS Between	F	p.
Ascendency	19.80	1/69	AGE	4.13	.21	.65
			SEX	52.70	2.66	.11
			RACE	151.61	7.66	.01
			AGE X SEX	.76	.38	.85
			AGE X RACE	99.99	5.05	.03
			SEX X RACE	5.63	.28	.60
Responsibility	15.18	1/69	AGE	4.35	.22	.88
			SEX	4.09	.29	.59
			RACE	1.16	.27	.61
			AGE X SEX	1.85	.12	.73
			AGE X RACE	6.49	.43	.52
			SEX X RACE	4.11	.27	.60
Emotional Stability	16.29	1/69	AGE	1.03	.07	.80
			SEX	80.99	5.07	.03
			RACE RACE	35.24	2.21	.14
			AGE X SEX	10.41	.65	.42
			AGE X RACE	3.51	.22	.64
			SEX X RACE	6.46	.40	.53

Table 3 Continued

Dependent Variable	MS Error	D.F.	Effect Tested	MS Between	F	p.
Sociability	17.94	1/69	AGE	.45	.03	.88
			SEX	2.41	.13	.72
			RACE	.15	.01	.93
			AGE X SEX	3.22	.18	.67
			AGE X RACE	190.66	10.63	.00
			SEX X RACE	10.33	.58	.45
Cautiousness	22.48	1/69	AGE	58.68	2.61	.11
			SEX	7.57	.34	.56
			RACE	11.40	.51	.48
			AGE X SEX	3.56	.16	.69
			AGE X RACE	6.16	.27	.60
			SEX X RACE	26.54	1.18	.28
Original Thinking	17.16	1/69	AGE	12.37	.72	.39
			SEX	7.06	.41	.52
			RACE	6.53	.38	.54
			AGE X SEX	10.24	.59	.44
			AGE X RACE	3.15	.18	.67
			SEX X RACE	9.08	.53	.47

Table 3 Continued

Dependent Variable	MS Error	D.F.	Effect Tested	MS Between	F	p.
Personal Relations	14.70	1/69	AGE	12.37	.72	.39
			SEX	7.06	.41	.52
			RACE	6.53	.38	.54
			AGE X SEX	97.80	6.65	.01
			AGE X RACE	26.76	1.82	.18
			SEX X RACE	50.47	3.43	.07
Vigor	24.86	1/69	AGE	11.26	.45	.50
			SEX	1.04	.04	.84
			RACE	2.81	.11	.74
			AGE X SEX	.39	.02	.90
			AGE X RACE	50.71	2.04	.16
			SEX X RACE	2.24	.09	.77
Achievement (controlled for aptitude)	9.83	1/69	AGE	.44	.05	.83
			SEX	.99	.10	.75
			RACE	23.51	2.39	.13
			AGE X SEX	5.12	.52	.47
			AGE X RACE	2.28	.29	.59
			SEX X RACE	3.83	.39	.54

Table 3 Continued

Dependent Variable	MS Error	D.F.	Effect Tested	MS Between	F	p.
Aptitude	165.15	1/69	AGE	597.47	3.62	.06
			SEX	1108.81	6.71	.01
			RACE	54.56	.33	.57
			AGE X SEX	295.20	1.79	.19
			AGE X RACE	532.13	3.22	.08
			SEX X RACE	66.82	.40	.53

Discussion

Correlations

The multiple regression analyses predicting achievement controlled for aptitude indicated that Vigor was the only significant predictor ($p. < .05$), emerging as a signficant predictor only when racial groups and genders were examined separately: Blacks only R. = .20; males only R. = .42. The significance of this particular personality trait for Black students and for male students could have curricular implications for educators. Since students scoring low on this scale tend to have low energy and to tire easily, to prefer a slow pace and to be below average in terms of output or productivity, these students could be placed in classes where a slower pace is maintained, and time restraints are less rigid. Also, students scoring low on this scale could be discouraged from enrolling in accelerated summer school classes or from taking maximum credit hour loads--i.e. situations where frustration would be likely to occur. Conversely, students scoring high on this scale (indicating a high energy level, a desire to work and move rapidly, and a tendency to accomplish more than the average person) could be encouraged to enroll in accelerated summer classes or to maximize their course load.

Although Vigor was the only personality trait which correlated with achievement, significant relationships between personality traits and other kinds of variables

emerged. For example, the correlation between Ascendency and Race was highly significant ($r. = .28$, $p. < .01$). This could be explained in several ways. Respondents who score high on this scale tend to be verbally assertive, active in groups and self-assured in relationships with others; those who score low on this scale tend to play a passive role in groups, to listen rather than talk, to depend on others for advice and leadership. Black students may have been more ascendent than Caucasion students as a compensation mechanism; adopting an active role in groups and being verbally dominant may indicate compensatory behavior of minority students. Another possible explanation may lie in the population of subjects tested: 75% of the subjects were Black. In this environment, the Black students were not in the minority. The predominantly Black classroom may have created a sense of security and, ultimately, affected the level of Ascendency of both Caucasion and Black students: i.e., raising the level of Ascendency of the minority students (Blacks) and lowering the level of Ascendency of the minority students (Caucasions). Future studies could address the question of Ascendency in terms of majority and minority groups considering both race and gender. Is it characteristic of any majority group to be less ascendent relative to the minority group? Can one validly infer that minority groups are consistenty more ascendent to compensate? If future research supports the conclusions of

this study and finds a correlation between Ascendency and race and/or gender, educators could use this information to better balance groups within classrooms or even entire classes. Data answering these questions could provide an innovative, supplemental reason for desiring that classes be equally proportioned in terms of majority versus minority students. Results of this study could have practical educational implications if equally proportioning the majority/minority populations in classes (both in terms of male/ female populations and Caucasion/minority student populations) could create a balance of ascendent versus nonascendent students, reducing the possibility of creating classes comprised of entirely one type of student or another.

A negative correlation between Emotional Stability and Gender also emerged, males reporting higher levels of Emotional Stability than females. The relatively small number of subjects combined with the predominately female population (68% female) may have influenced these results. However, if future studies support these findings, groups of female students scoring low on this scale (indicating excessive anxiety, hypersensitivity, nervousness, and a low frustration tolerance) could be placed in learning situations where success is more easily achieved and frustration is less apt to occur.

The relatively high correlation between Cautiousness and Age ($r. = .36$; $p. < .01$) supported previous research by Engel(1981) which indicated that older learners tended to be more cautious. Apparently, as Engel (1981) suggested, this tendency toward Cautiousness in older learners did not affect achievement since Cautiousness and Achievement themselves were not significantly correlated. However, one could logically infer from the higher level of Cautiousness reported by non-traditional students (<25 years) that certain classroom and curricular strategies might be beneficial for older learners. For example, curricula for older learners could provide opportunities to take "safe" chances or could provide an atmosphere in which adult learners have the time and opportunity to make decisions and try new solutions which may run counter to previous experience.

Pearson correlations also indicated a negative relationship between Race and Personal Relations. This suggested that Black students scoring very low on this scale (indicating a lack of confidence in people, a tendency to be critical of and to be irritated by others) could possibly be placed in programs which provide a more individualized or self-study atmosphere. These students would probably feel more comfortable in non-social learning situations such as programmed learning or computer learning.

Another logical correlation emerged between Age and Vigor ($r. = .24$; $p. < .05$). Again, since low scores on this scale indicated a low energy level, a preference for setting a slow pace, and a tendency to tire easily and be below average in terms of productivity, older learners might benefit from certain changes in the learning environment: i.e., shorter class sessions for an extended number of weeks.

Group Differences: Group Interaction Effects

Means and standard deviations for the 3-way ANOVAs were generally consistent with correlational analyses and could be interpreted in a similar way. However, several significant interaction effects emerged which are worthy of comment or interpretation. For example, when scores on Ascendency were examined, there was a significant interaction between Age and Race (i.e., the difference between the scores of older than 25 versus younger than 25 years was greater among Blacks than Caucasions) indicating that the distinction in assertiveness was more important for older Black students. An educator might find it beneficial to anticipate this difference in minorities. The older the Black students were, the higher the level of Ascendency they reported, indicating a self-confidence and conviction of belief associated with Age.

An Age X Race interaction was also significant when Sociability was considered. Interestingly, Caucasion

students under age 26 reported higher levels of Sociability (indicating gregariousness and a desire to work with people) than did Caucasion students over 25 years; whereas, the reverse was reported by Black students: students over 25 years reported higher levels of Sociability than did students under 26 years. This tendency in Caucasion students might, in part, be explained by the predominantly female population. Older female students may have preferred or have been forced by time restraints to devote social time to family obligations. It is more difficult to explain the reverse tendency in Black students. Perhaps, with age, Black students (minority students) gained a certain degree of confidence or trust which promoted gregariousness. Whatever the logic, if these Age X Race interaction effects are supported in future research, educators could gain insight for establishing teaching styles within classrooms where Age and Race are factors (i.e., more group work for Caucasion students under 26 years and Black students over 25 years; more individualized learning for Caucasion students over 25 years and Black students under 26 years).

Finally, a Sex X Age interaction was significant when Personal Relations was considered, males over 25 years versus females under 26 years reporting higher levels on this scale than males under 26 years versus females over 25 years. Again this tendency in older males and younger females to have faith and trust in people and to be patient

and tolerant could provide additional cues for the classroom instructor to more effectively group students and plan curricula.

Limitations

There were several limiting factors to this study. First, the population was relatively small (N = 77) and was predominately Black (75%) and female (68%) perhaps influencing the results. Second, the reliability of the test used to measure achievement was less than desirable (KR-20 = .68). Third, the inventory used to measure the personality traits was a self-report instrument: a measure of the students' perceptions of their behavior as opposed to a measure of behavior itself. On the other hand, the use of a self-report inventory may not be entirely undesirable. Since how one feels about oneself may affect achievement more directly than how one actually behaves it may be the self-perception of students which is important to teachers and counselors. Fourth, the GPPI defined the eight personality traits in clinical, almost medical, terms. These definitions may not be entirely appropriate for education. A different measure which defines these personality traits from a sociological or interactive viewpoint may have revealed additional correlations. Future studies may want to consider different inventories which define personality in concrete behavioral terms. Finally, achievemnt was measured for reading only, and results cannot

be generalized to achievement in other academic subjects. Again, in the future, researchers may want to extend the area of concentration to include several content areas. Compensating for the limitations of this study, future researchers may discover interesting and valuable relationships between personality and achievement for minority/majority community college students.

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Appendix A

Extended Review of Literature

Although research attempting to establish a relationship between personality traits and achievement exists, the quantity of literature in this area is not overwhelming. In general, prior research studies have attempted to answer the following questions: (a) Is there a positive or negative correlation between personality traits and achievement? (b) Are personality traits possible predictors of academic achievement? (c) Do adult high achievers and low achievers report different personality traits than typical college, secondary, or elementary students?

Personality and Reading Achievement

Many research studies have investigated the possible relationship between specific, individual personality traits and reading ability or achievement. The results of these studies are in some ways contradictory. In a 1984 study conducted by Rosa Clark, all six hypotheses relating to the relationship between self concept and reading ability were rejected. Similarly, Grace Fung (1984) examined intellectual factors and affective variables (self-esteem and anxiety) for normal and disabled readers in elementary schools to determine whether or not relationships existed.

Fung found a significant negative relationship between anxiety level and reading achievement for disabled readers and a significant positive relationship between self-esteem and reading achievement for normal readers. In a similar study conducted to gain insight into self concept, enthusiasm, and motivation with respect to reading achievement, Betsy Priddle (1984) found a positive relationship between self concept, enthusiasm, and motivation and reading achievement. Finally, in an exploratory study conducted to examine the relationship between cautiousness and the percent of error correction of oral reading miscues, results were inconclusive indicating the need for further research in the area of reading achievement and personality traits (McLaughlin, 1984).

Personality and Achievement in Math or Science

Research examining the relationship between achievement and personality traits has not been limited to the discipline of reading comprehension. Many studies have been conducted attempting to define the relationship between various personality traits and achievement in mathematics and science. In a 1985 study undertaken to determine the possible benefits of matching instruction strategy to complement the learning needs of students with a particular combination of personality characteristics--the need for

love and belonging, an external locus of control, and a field dependent cognitive style--Crawley and Trout (1985) found that, in this case, matching had a deleterious effect on students' achievement. Students who were completely incompatible with the treatment (i.e. field independent, internal locus of control) outperformed students who were completely compatible with the instructional strategy. Crawley and Trout concluded that designing instruction to meet personality related learning needs of students is well intentioned but most likely to produce limited results (page 5). Contradictorily, in a study which explored the relationship between mathematics achievement and sex, sex role identity, self-esteem, and locus of control, Biaggio and Pelofski (1984) found a possible relationship between self-esteem and math achievement for females but not for males, but found no relationship between locus of control and math learning and achievement for either males or females. These results contradict previous researach done by Starr (1976) which indicated that an internal locus of control facilitated female mathematics achievement. Biaggio and Pelofski (1984) concluded that the attrition rate in their study may have biased the post-test sample rendering the findings on locus of control inconclusive.

Personality and Success Among Business Students

Although there is no clearly established link between business success and the personality characteristics of the individual, reseachers continue to seek a possible relationship. In a 1984 study, Carsrud, Olm, & Thomas examined ten personality/motivational variables (work, mastery, interpersonal competitiveness, personal unconcern, verbal aggressiveness; instrumentality, expressivity, hostility, need for power, and need for influence) and their relationship to business success (achievement). The pattern of significant correlations varied between sexes and by the particular success measure examined. Significant correlations were found for measures obtained early in the simulation exercise; whereas, the final measures lacked significant correlations possibly indicating a need for studies with a greater time duration in which the situational demands of the simulation would not be as likely to affect the outcome.

More conclusive findings were obtained by Barney, Fredericks, & Fredericks in a 1984 study which examined the relationship between academic achievement and personaltiy characteristics of business students attending a private university. Barney, Fredericks, & Fredericks (1984) hypothesized that students with higher academic achievement would have significantly higher social responsibilty

responses and anonmy responses than would students with lower academic achievement. They further hypothesized that students with higher achievement would have significantly lower stress-anxiety responses than students with lower academic achievement. The findings of the study suggested that there was no relationship between academic achievement and social responsibility responses, anonmy responses and stress-anxiety responses. They rejected all hypotheses. However, subjects in this study were predominately white, urbanites, limiting the generalizations of the results.

Personality and Grade Point Average

Studies have also been undertaken which have attempted to define a relationship between personality traits and achievement across the disciplines using grade point averages as composite criterion measures. One study, conducted by Ho and Spinks (1985) at the University of Hong Kong, used verbal intelligence, English language skills, personality (authoritarianism, rigidity, dogmatism, conformity, fatalism-superstition, and belief stereotype), and attitude scales as predictors of academic performance. The seven personality variables failed to predict performance when GPA's were used; however, several significant positive correlations were obtained when the results of individual academic subjects were used as criterion measures. Ho & Spinks suggested that "prediction

might be enhanced and made more meaningful if individual examination results were used as criterion variables in place of GPA's." (page 256). The heterogeneous or divergent elements of the criterion may have invalidated the predictive value of certain variables. Ho & Spinks concluded that even though personality and attitudinal factors have not been conclusively established as determinants of performance or achievement, they should not be discounted. Nonintellective factors should be considered within specific disciplines and could prove to be valuable predictors of academic achievement.

In an investigation to test Holland's prediction that educational achievement relates to primary personality types in a predictable fashion, Schneider & Overton (1983) found some support for Holland's predictions and research. Holland's research indicated that social and enterprising orientations were positively related to leadership in college and that scientific achievement was positively related to investigative orientation and somewhat to realistic orientation, and finally that the enterprising personality seemed to relate to artistic achievement (Schneider & Overton, 1983). Schneider & Overton's study attempted to evaluate the validity of the assumption that high achievement relates to Holland's primary personality types in the following order: investigative, social, artistic, conventional, enterprising, realistic. Results

indicated that conventional and social males (at the college level) achieved higher GPA's than males whose Holland types were either realistic-enterprising, or tied (no clearly identifiable personality type). No predictability using Holland's personality traits was established for females. Thus, Schneider & Overton's study partially supported Holland's findings and indicated the need for further research which considers sex of the student, socioeconomic status, and environmental factors.

In another study which also used GPA as a measure of achievement, George DeBoer used a path analytic model to test and explain the effect of a series of intellective and non-intellective student characteristics on high school and college achievement. DeBoer's research suggested that non-intellective qualities such as personality traits produced little or no increase in the prediction of college grade point average when combined with traditional intellective measures. Using three intellective measures (college GPA, high school record, and SAT scores) and four non-intellective measures (persistence, home influence, peer influence, and self control), DeBoer concluded that "persistence was the most important of the non-intellective factors and that the effects of the other non-intellective variables were negligible when persistence was present in the model." (page 491).

Personality and Teacher Training

Personality characteristics have also been considered as factors in learning and achievement in teacher training programs. In a 1985 study conducted to examine how personal characteristics affect the learning process for teachers in training, Hungerman & Schwertfeger examined three personal development variables with respect to instructional skill effectiveness: identity achievement, trait anxiety, and state anxiety. The study began with the assumption that there was a pattern of personal development and behavior which influenced each student to react uniquely to experiences with the qualities he or she brought to the situation. Hungerman and Schwertfeger (1985) found that students with high identity achievement and low anxieties were confident from the start of student teaching, realized early success, and made steady significant progress throughout student teaching; whereas, students with low identity achievement and high anxieties were slow starters, lacked confidence, were unable to control the children, made progress in uneven spurts, and succeeded only toward the end of student teaching.

Studies Focusing on High Versus Low Achievers

Rather than sampling entire heterogeneous populations, many research studies have concentrated on the extreme populations of students (high achievers, low achievers, high risk students, gifted students) when considering personality traits as possible predictors of academic achievement. In a

research study conducted by Nisbet, Ruble, & Schurr (1982), the Meyers-Briggs Type Indicator (MBTI) was administered to a group previously identified as high risk students at Ball State University in an attempt to find additional information which might predict academic success of students within this group. The judgemental-perception scale of the MBTI proved to be a measure signficant in improving the prediction of GPA (academic achievement). Nisbet, Ruble & Schurr concluded that students who indicated more needs of routing, closure, and rigidity (judgemental) were more likely to attain academic success. They further suggested that the use of nonacademic aptitude and performance information for a type of student for whom academic aptitude and past performance data have not been particularly good predictors of academic success raised the predictability of GPA and, hence, the likelihood of the identification of potential problem students to approximately the same level as that for using aptitude measures with nonrisk students.

Similarly, a research study conducted by Judd et al. (1985) compared students who experienced academic difficulty as measured by GPA with students not in academic difficulty. Using Jackson's Personality Research Form to assess the relationship of personality and motivational factors (endurance, cognitive structure, order, achievement, play, change, and impulsivity scales) to academic achievement for students identified as in academic difficulty, Judd et al.

concluded that students in academic diffuculty had lower expectations for academic success and seemed to have poor study habits and attitudes. Results from this study have caused the creation of a new system of data collection on students at Rockland Community College which includes examination of study attitudes and habits, expectations, academic self concept, and other affective measures.

Studies Using the Meyers-Briggs Type Indicator

Although research studies have examined a broad variety of personality traits and their relationship to achievement, a bulk of the research in this area has utilized the Meyers-Briggs Type Indicator as a measure of personality traits (Robyak & Downey, 1979; Robyak & Patton, 1977; Thomason, 1983; Nisbet, Ruble, & Schurr, 1982). These studies using the MBTI all attempted to demonstrate that there were identifiable personality dimensions that were associated with different levels of academic achievement. For example, a recent study which examined the extent to which students who enroll in a study skills course with and without a history of underachievement could be differentiated by their personality preferences and levels of study skills knowledge and use, Robyak & Downey (1979) found that nonunderachievers exhibited high study skills knowledge scores and a preference toward introversion. These results were in agreement with their expectations that "students who exhibit preferences for introversion,

intuition, and judgment, appear to be academically successful." (page 306).

An earlier study (1977) conducted by Robyak & Patton which also used the MBTI as a personality measure, suggested that grade point average gain which usually follows the completion of a study skills course may be a more accurate reflection of the degree to which students learn to use effective study skills rather than the degree to which students acquire knowledge of these study skills. Further, the use of study skills may be associated with certain personality traits, specifically, the judging-perceiving scale of the MBTI. Although Robyak & Patton found no significant difference between judgers and perceivers on measures of study skills knowledge, study skills use, academic effectiveness, or student satisfaction, a significant difference was indicated between judgers and perceivers in their post course use of study skills. Judgers learned to use study skills more frequently than did perceivers; however, this increased use of study skills did not also produce parallel increase in grade point average (verifiable achievement). Robyak & Patton suggested that the lack of subsequent rise in grade point average could be explained in several ways: (a) The rather small number of subjects (20) may have influenced the findings; (b) The high GPA for both personality types (judgers 3.244; perceivers 3.463) may have affected the results; or (c) Grade inflation

may have rendered the use of GPA an ineffective measure of academic achievement.

Rose Thomason (1984) also used the MBTI in a study which investigated the relationship and interaction of chronological age, psychological type and reading comprehension of college students. Results of this study indicated that judging was positively correlated with total comprehension and critical scores, and detail reading scores correlated positively with introversion and thinking. Thomason's study found no correlation between reading comprehension and age suggesting that although the psychological type or personality traits of the learner do affect reading comprehension, age does not seem to be a factor.

Interestingly, the results of the research studies discussed thus far fail to indicate a strong relationship between personality traits and achievement, or the studies provide mixed or contradictory results. As Lavin (1967) pointed out, this lack of consistency could be caused by a failure to isolate enough of the right variables. Perhaps one variable which merits consideration when examining the relationship between personality traits and achievement is the race of the learner. A study conducted by Lay & Wakestein (1985) partially addressed this issue. Lay & Wakestein concluded that a correlation between academic achievement and self-esteem exists for both black and

whites. They suggested that self-esteem and self concept may be better predictors of educational attainment than SAT scores for minority students and urged further research focusing on personality traits and academic achievement of minority students.

Studies of Adult Learners

Thus far, this review of literature has focused on students at the elementary level, secondary level, or on typical college age students; however, another variable which may provide interesting ramification is the variable of age. A dramatic shift in the college population in the United States has recently focused attention on a relatively new classification of student--the adult learner or reentry college student. As Gene Whaples (1979) suggested, "many questions [about adult learners] remain unanswered...a better link between researchers and practitioners is one way of helping find the answers to the day to questions." (page 8). In an article which synthsized currently available knowledge about adult learning in the areas of motivation to learn, curriculum design, and the classroom environment, Ron and Susan Zempke (1981) offered thirty statement about adult learners, many of which directly or indirectly deal with personality traits. For example, the Zempkes contended that adults tended to take errors personally and were more likely to let mistakes affect self-esteem; therefore, adults tended to apply tried and true solutions and take fewer risks. Ron

and Susan Zempke further contended that adults wanted their learning to be problem-oriented, personalized and accepting of their need for self-direction and personal responsibility. Supporting this contention, Richard Skruber (1982) suggested that education for adult learners "ought to have as one of its primary goals helping individuals become self-directed learners." (page 1).

Most current literature on adult education and the adult learner has supported the idea that adults require a different type of learning environment, an approach alien to the traditional classroom. In a research study conducted to explore a possible relationship between the personality traits of cautiousness and confidence in middle-age adult learners (ages 30-60), Joanne Engel (1981) found that prior knowledge had the possibility of making an adult learner more cautious, particularly if there was a similarity between past and present knowledge suggesting the possible need for strategies which compensate for this personaltiy trait. Somewhat contradictorily she also found that middle-aged adults, whether they have continued their education or not, were as confident in approaching a difficult multiple choice prose learning task as were younger, scholastically experienced adults.

Finally, Carolyn Johnson (1984) compared personality differences between traditional and reentry women students. She found that reentry women students had a higher degree of

assertiveness, were more liberal in feminist attitude, were less external in locus of control, were less competitive, and were less concerned with the negative reactions of others. Clearly, differences exist in personality traits exhibited by traditional learners and adult learners. Discovering these differences and analyzing these differences could possibly allow educators to facilitate learning and predict academic success.

Summary

Since the primary purpose of this study was to examine the possible relationship between several personality traits and achievement for traditional students and adult learners, this review of literature has incorporated several relevant areas of interest and concern. Both anecdotal and empirical evidence has suggested a possible relationship between academic achievement and certain personality traits; however, much of the evidence available has been contradictory or confusing. Research using grade point average as a composite measure of academic achievement has produced contraditory results indicating that the relationship between personality traits and achievement should possibly be approached separately in each discipline. Many of the studies have limited the personality traits considered to the categories in the Meyers-Briggs Type Indicator or the Holland Personality Types possibly excluding personality traits which could prove to be of

predictive value or could be used to modify learning environment or strategies. Adult learners (age 25 and older) are increasing in population in the United States and appear to have special needs and to require learning strategies which are not typical of the traditional teacher-centered classroom. Personality traits of adult learners may provide a clue which may help provide more effective instruction and more accurate prediction of academic success. This review of literature has attempted to highlight recent research in the areas of personality traits and achievement and to demonstrate the need for more research in this area, especially in the area of adult education.

Appendix B
Instruments

Gordon Personal Profile-Inventory

		M	L
1.	a good mixer socially	___	___
	lacking in self confidence	___	___
	thorough in any work undertaken	___	___
	tends to be somewhat emotional	___	___
2.	not interested in being with other people	___	___
	free from anxieties or tensions	___	___
	quite an unreliable person	___	___
	takes the lead in group discussion	___	___
3.	act somewhat jumpy and nervous	___	___
	a strong influence on others	___	___
	does not like social gatherings	___	___
	a very persistent and steady worker	___	___
4.	finds it easy to make new acquaintances	___	___
	cannot stick to the same task for long	___	___
	easily managed by other people	___	___
	maintains self-control even when frustrated	___	___
5.	able to make important decisions without help	___	___
	does not mix easily with new people	___	___
	inclined to be tense or high-strung	___	___
	sees a job through despite difficulties	___	___
6.	not too interested in mixing socially with people	___	___
	doesn't take responsibilities seriously	___	___
	steady and composed at all times	___	___
	takes the lead in group activities	___	___
7.	a person who can be relied upon	___	___
	easily upset when things go wrong	___	___
	not too sure of own opinions	___	___
	prefers to be around other people	___	___
8.	finds it easy to influence other people	___	___
	gets the job done in the face of any obstacle	___	___
	limits social relations to a select few	___	___
	tends to be a rather nervous person	___	___

9. doesn't make friends very readily. . . . . ___ ___
takes an active part in group affairs. . . . . ___ ___
keeps at routine duties until completed. . . . . ___ ___
not too well-balanced emotionally. . . . . ___ ___

10. assured in relationships with others. . . . . ___ ___
feelings are rather easily hurt. . . . . ___ ___
follows well-developed work habits . . . . . ___ ___
would rather keep to a small group of friends. . . ___ ___

11. becomes irritated somewhat readily. . . . . ___ ___
capable of handling any situation. . . . . ___ ___
does not like to converse with strangers . . . . . ___ ___
thorough in any work performed. . . . . ___ ___

12. prefers not to argue with other people. . . . . ___ ___
unable to keep to a fixed schedule. . . . . ___ ___
a calm and unexcitable person. . . . . ___ ___
inclined to be highly sociable. . . . . ___ ___

13. free from worry or care. . . . . ___ ___
lacks a sense of responsibility. . . . . ___ ___
not interested in mixing with the opposite sex. . ___ ___
skillful in handling other people. . . . . ___ ___

14. finds it easy to be friendly with others. . . . . ___ ___
prefers to let others take the lead in groups. . . ___ ___
seems to have a worrying nature. . . . . ___ ___
sticks to a job despite any difficulty. . . . . ___ ___

15. able to sway other people's opinions. . . . . ___ ___
lacks interest in joining group activities. . . . ___ ___
quite a nervous person. . . . . ___ ___
very persistent in any task undertaken. . . . . ___ ___

16. calm and easygoing in manner. . . . . ___ ___
cannot stick to the task at hand. . . . . ___ ___
enjoys having lots of people around. . . . . ___ ___
not too confident of own abilities. . . . . ___ ___

17. can be relied upon entirely. . . . . ___ ___
doesn't care for the company of most people. . . . ___ ___
finds it rather difficult to relax. . . . . ___ ___
takes an active part in group discussion. . . . . ___ ___

18. doesn't give up easily on a problem. . . . . ___ ___
inclined to be somewhat nervous in manner. . . . . ___ ___
prefers to pass the time in company of others. . . ___ ___
prefers to pass the time in company of others. . . ___ ___

19. a very original thinker. . . . . ___ ___
a somewhat slow and leisurely person. . . . . ___ ___
tends to be critical of others. . . . . ___ ___
makes decisions only after a great deal of thought ___ ___

20. believes that everyone is essentially honest. . . ___ ___
likes to take it relatively easy at work or play. ___ ___
has a very inquiring attitude. . . . . ___ ___
tends to act on impulse. . . . . ___ ___

21. a very energetic person. . . . . ___ ___
doesn't get angry at other people. . . . . ___ ___
dislikes working on complex and difficult problems ___ ___
prefers lively parties to quiet gatherings. . . . ___ ___

22. enjoys philosophical discussions. . . . . ___ ___
gets tired somewhat easily. . . . . ___ ___
considers matters very carrefully before acting. . ___ ___
does not have a great deal of confidence in people ___ ___

23. likes to work primarily with ideas. . . . . ___ ___
does things at a rather slow pace. . . . . ___ ___
very careful when making a decision. . . . . ___ ___
finds a number of people hard to get along with. . ___ ___

24. a great person for taking chances. . . . . ___ ___
becomes irritated at other people quite readily. . ___ ___
can get a great deal done in a short time. . . . . ___ ___
spends considerable time thinking of new ideas. . ___ ___

25. a very patient person. . . . . ___ ___
seeks thrills and excitement. . . . . ___ ___
able to keep working for long stretches. . . . . ___ ___
would rather carry out a projject than plan it. . ___ ___

26. feels very tired at the end of the day. . . . . ___ ___
inclined to make hurried or snap judgments. . . . ___ ___
doesn't get resentful toward other people. . . . . ___ ___
has a great thirst for knowledge. . . . . ___ ___

27. does not act on the spur of the moment. . . . . ___ ___
    becomes irritated by faults in others. . . . . ___ ___
    lacks interest in doing critical thinking. . . . . ___ ___
    prefers to work rapidly. . . . . ___ ___

28. inclined to become very annoyed at people. . . . . ___ ___
    like to keep on the go all the time. . . . . ___ ___
    would rather not take chances or run risks. . . . ___ ___
    prefers work requiring little original thought. . ___ ___

29. a very cautious person. . . . . ___ ___
    prefers to work rather slowly. . . . . ___ ___
    very tactful and diplomatic. . . . . ___ ___
    would rather not occupy the mind with deep thought ___ ___

30. loses patience readily with people. . . . . ___ ___
    has somewhat less endurance than most people. . . ___ ___
    tends to be creative and original. . . . . ___ ___
    doesn't care much for excitement. . . . . ___ ___

31. tends to act on hunches. . . . . ___ ___
    has a great deal of vigor and drive. . . . . ___ ___
    doesn't trust people until they prove themselves. ___ ___
    enjoys questions involving considerable thought. . ___ ___

32. doesn't like to work at a fast pace. . . . . ___ ___
    has great faith in people. . . . . ___ ___
    tends to give in to the wishes of the moment. . . ___ ___
    enjoys working out complicated problems. . . . . ___ ___

33. a very energetic worker. . . . . ___ ___
    accepts criticism with very good grace. . . . . ___ ___
    dislikes problems requiring a lot of reasoning. . ___ ___
    inclined to act first and think afterward. . . . . ___ ___

34. speaks nothing but the best about other people. . ___ ___
    very cautious before proceeding. . . . . ___ ___
    not interested in thought-provloking discusssions. ___ ___
    does not hurry in going from place to place. . . . ___ ___

35. doesn't have an inquiring mind. . . . . ___ ___
    doesn't act on impulse. . . . . ___ ___
    generally bursting with energy. . . . . ___ ___
    becomes irritated by weaknesses in others. . . . . ___ ___

36. able to get more things done than other people. . __ __
enjoys taking chances just for the excitement. . .__ __
takes offense when subjected to criticism. . . . .__ __
would rather work with ideas than things. . . . . __ __

37. very trustful of other people. . . . . .__ __
prefers work that is routine and simple. . . . . .__ __
does things on the spur of the moment. . . . . .__ __
full of vigor and vitality. . . . . __ __

38. makes decisions much too quickly. . . . . __ __
has a great liking for everybody. . . . . __ __
maintains a lively pace at work or play. . . . . .__ __
does not have an interest in acquiring knowledge. __ __

Supplemental Table

Multiple Regression Analyses

Predicting Achievement

(controlled for aptitude)

Population	(n)	R	Significant precitors[a]	Beta weight	Cumulative R^2
All subjects	77	N.S.			
Caucasions	19	N.S.			
Females only	52	N.S.			
< 26 years	43	N.S.			
25 yrs +	34	N.S.			
Black	58	.29	Vigor	.285	.08
Males	25	.43	Vigor	.430	.19

[a] $p. < .05$