DOCUMENT RESUME

ED 039 545 CG 005 324

AUTHOR Conklin, R. C.; And Others
TITLE Differentiating and Predictor Variables for Mature Non-Matriculant Students at the University of Calgary.
INSTITUTION Calgary Univ. (Alberta).
PUB DATE Apr 70
NOTE 71p.

EDRS PRICE EDRS Price MF-$0.50 HC-$3.65
DESCRIPTORS Adult Education, *Continuation Education, *Continuation Students, Higher Education, *Individual Characteristics, Individual Differences, Prediction, Reading Skills, *Student Evaluation, Study Habits, *Success Factors, Verbal Ability

ABSTRACT

A biographical inventory, an ability test, and three reading tests were administered to 699 persons who were hopeful about beginning course work at the University of Calgary. These students were categorized as Mature Non-matriculants because they did not have senior matriculation which is necessary for normal entry to the university. A total of three groups were compared: (1) those who wrote tests but did not enroll in courses; (2) those who wrote tests, enrolled and dropped out; (3) those who wrote tests and successfully completed courses. Differences were found between the first and third groups in verbal ability and reading. A second study was conducted using only the successful Mature Non-matriculant students. In addition to the data from the first study, a battery of new tests were administered including a personality measure, a values scale, a study habits inventory, and a need-achievement test. All data was intercorrelated with the criterion-grade point average. Results seemed to follow those of the first study, that is, students are more likely to be successful if they excel in reading ability, verbal aptitude, and study habits. (Author/KJ)

DIFFERENTIATING AND PREDICTOR VARIABLES FOR MATURE NON-MATRICULANT STUDENTS AT THE UNIVERSITY OF CALGARY

R. C. Conklin

Department of Educational Psychology

April 1970

ABSTRACT

A biographical inventory, an ability test, and three reading tests were administered to 699 persons who were hopeful about beginning course work at the University of Calgary towards a degree. These individuals were categorized as Mature Non-matriculants because they did not have senior matriculation which is necessary for normal entry to the university. Three groups were eventually compared: (a) those who wrote the tests but did not enroll in any courses (pre-enrollment drop-outs); (b) those who wrote the tests, enrolled in a course and dropped out (post-enrollment drop-outs); and finally, (c) those who wrote tests and completed one or more courses successfully (completions). Differences were found between the pre-enrollment drop-outs and the completions on verbal ability and reading. A number of biographical variables also differentiated between these groups.

A second study was carried out which used only the successful Mature Non-matriculant students as subjects. In addition to the available data from the first study, a battery of new tests was administered including a personality measure, a values scale, a study habits inventory, and a need-achievement test. All data was intercorrelated with the criterion—grade point average. Results seemed to follow those of the first study, that is, students are more likely to be successful if they excel in reading ability, verbal aptitude, and study habits.

The results of both studies seemed to imply a need for reading and study skills classes for mature students, as well as the use of these

variables for selection purposes. Orientation to familiarize students with the university milieu was also considered an important factor.

ACKNOWLEDGMENTS

The author would like to extend his appreciation to Clayton Allen and Jim Phelps who worked faithfully for many months collecting data; to Mrs. Joan North for her varied and untiring efforts; and to the Alberta Human Resources Research Council for their support. A special thanks should be extended to the many students who volunteered their time in order to give us the necessary data. Thanks are also extended to all agencies in the University who cooperated with the project, such as Student Counselling Services, the Faculty of Education, and the Faculty of Arts and Science.

Summary of Conclusions

1. Successful mature students have a greater verbal facility as indicated on verbal aptitude tests.

2. There is no evidence that the sex or marital status of the mature student has any effect on eventual success in university courses. However, it must be pointed out that approximately two-thirds of the mature students are married.

3. Successful mature students are likely to have continued formal school longer than unsuccessful students and dropped out for reasons other than low grades.

4. Successful mature students appear to gain a great deal of support for their undertaking from both friends and family. The spouse more often than not had some university training and a professional vocation.

5. Approximately 75% of the mature students registered in three or more courses in their first year.

6. Successful mature students have better study habits.

7. Successful mature students are superior in their reading habits.

8. The personality preference for exhibitionism was positively related to success, and the economic value was negatively related to success for Mature Non-matriculant students.

A Brief statement of Implications and Recommendations

1. Opportunity for Mature Non-matriculant students to upgrade their reading skills should be provided by the University. These programs should be advertised to mature students at an early point in their application to the University.

2. Opportunities should also be available for increasing study skills and working out of attitudes towards university in general, and study in particular.

3. Some method of orienting mature students to the university environment seems to be an important variable; that is, when a mature student seems to have support from friends and have a constant association with someone at university, a greater chance for success seemed to be indicated. These orientation proceedings should, in all likelihood, be a series of sessions and should be conducted by some agency such as the Student Affairs.

4. If tests are going to be used as a screening process for admittance to the Mature Non-matriculant Program, then reading ability in all its facets should be considered as probably one of the most important criteria and therefore should be used in this screening process.

Introduction

Post secondary education is almost certainly a prerequisite for employment in our complex occupational society. It is essential that society in general, but institutions of higher learning more specifically, develop human resources to the fullest possible extent in order to maintain and promote the maximization of human potential. Many persons who have the intellectual ability to seek further education have for one reason or another halted their development short of their full capability in this area. This situation results in a waste of human resource!

Pipher (1962), in a study of students who were delayed or prevented from attending university, examined 9,404 students in grade thirteen in Ontario. It was found that eventually approximately sixty percent of the eligible students began university work. This in itself, Pipher suggests, is not too serious a problem because many of the students who received matriculation standing went on to other institutions of higher learning rather than universities. However, when the number of eligible students in grade thirteen who did not proceed with further education are added to the number of students who dropped out prior to grade thirteen, a wastage of human talent becomes apparent.

If the drop-out rate appears to be alarming in high school, the problem seems to become more acute in educational activities. Adult students in most educational settings appear to have a relatively high attrition rate:

1. Mann (1966), analyzing the Federal Training Program in

Ontario, found the drop-out rate to be something between 63 and 65 percent.

2. Sainty (1968), in a study at the Alberta Vocational Centre in Calgary, established the drop-out rate at 55.2 percent.

Educational opportunities are expanding as well as becoming more fully developed as more adults find they either require or desire further education of some nature. Opportunities in the form of vocational education, high school education, university non-credit extension courses, and recreation courses are available to adults. Most of these programs have no stringent prerequisites other than the individual be an interested adult. Previously, adults were admitted to regular university programs on the condition that they met the general admission requirements of high school matriculation. A number of universities in Canada are now adopting procedures resembling other adult educational institutions with regard to prerequisites. The matriculation requirements are being waived for mature adults. Thus, in Canada today practically all existing types of educational opportunity are available to the adult population as well as the adolescent population.

The idea of mature non-matriculant students being admitted into regular university programs is a new venture in Canadian education. Society as a whole should benefit from this innovation as there will be mature people available to handle more specialized positions than they held before. An attempt is being made to develop the potential of the adult who did not complete his formal education. If one assumes that only those who have a reasonably good chance of success should be allowed

to enter the university then these adults must be evaluated in order to determine their suitability for university work. As a result, characteristics of those who succeed should be compared with characteristics of those who do not succeed.

The Problem

Across Canada there are now a number of universities admitting mature non-matriculant students but admittance procedures for these students vary. Vaselenak (1969) completed the most recent descriptive study of mature non-matriculant programs in Canadian universities. She found that:

1. Approximately twenty-four universities in Canada admit mature non-matriculant students.

2. The numbers of students in this type of program are growing rapidly from approximately 236 in 1966-67 to approximately 2,478 in 1968-69.

3. Age requirements vary but are generally between 21 and 25. Some universities ignore a specific age but admit those whom they consider to be mature adults.

4. Courses regarded as prerequisite vary. Ten out of 24 universities require junior matriculation for admission.

5. Probationary periods vary across the 24 universities.

The University of Calgary has a flexible admission procedure for mature non-matriculants at the present time. Conklin (1969) referred to the entrance requirements for the mature non-matriculant students as follows:

1. A chronological age of 25 years for the Faculty of Education and 23 years for all other Faculties.

2. All Faculties require the mature non-matriculant students

to provide evidence of their desire for a university education as well as displaying promising academic ability.

Several reasons necessitate the desirability of a study of this nature. Enrollment generally is growing rapidly at the University of Calgary. The enrollment in the mature non-matriculant program has grown even more rapidly from approximately 50 students in 1966-67 to 400 students in 1968-69. At present, the research data on these students who form a significant portion of the university population is deficient.

Secondly, after a cursory examination of the Registrar's records, the various Faculty files and the Student Counseling Services files, it was recognized that a significant proportion of persons who wrote the preliminary examinations failed to register or did not remain in university. Approximately 48 percent of the individuals who completed the preliminary battery of tests failed to register in university. Three hundred and thirty-seven students out of a total of 699 did not enroll in any university courses. These particular persons have in most cases been drop-outs before. Perhaps they have a tendency to "drop out" from a variety of activities. One purpose of this study will be to determine whether there exist any characteristics which discriminate between those who continue on in university and those who drop out.

Admittance procedures could be improved if a battery of tests were used that differentiated between completions and drop-outs. Biographical information could provide some variables in this regard. It may be found that mature students require remediation in study skills, reading, and

socialization. The students themselves could realize a direct benefit if the battery of tests were interpreted meaningfully. At the present time, it is difficult to interpret these tests because there are no local norms. Individual students could then be made more aware of their chances for success in their educational pursuits.

In a review of the research literature, it has been found that the most commonly utilized type of variables to compare drop-outs and completions were scholastic aptitude, educational development, personality, values, and biographical information. As a result, these variables will be utilized in the present study.

Method - Study A

Sample

Adults, twenty-three years of age and older who planned on enrolling in the mature non-matriculant program at the University of Calgary, served as subjects for this study. Another requisite for inclusion in the study was the completion of a preliminary battery of tests administered by the Student Counselling Services. Most faculties require that potential students complete this battery prior to formal admittance. These tests, together with an interview by a faculty member generally constitutes the basis for admission into the University of Calgary.

The total population includes 699 persons who completed the preliminary battery of tests during the preceding three years. The

population was divided into three groups:

(a) Forty-one post-enrollment drop-outs.

(b) Three hundred and thirty-seven pre-enrollment drop-outs.

(c) Three hundred and twenty-one completions.

A more complete description of the population is presented later.

Testing Instruments

(1) Cooperative Academic Ability Test (CAAT)

The CAAT was used for assessing scolastic aptitude. The test yields three scores: a full scale score, a verbal scale score, and a mathematical scale score. Administration time is approximately 45 minutes. The handbook explains that the norms are based on midyear performance of a representative group of high school seniors. All students were enrolled in high schools which send 75 percent of their graduates to college of which all plan to attend university.

Validity coefficients, according to the manual, are verbal scale .52, mathematical .51, and total score .56. Reliability coefficients were reported to range from .78 to .94.

A. E. Traxler (1964) attempted to predict 9th and 10th grade English and mathematics marks from the CAAT. He found the coefficients to be somewhat less reliable, ranging from .28 to .64.

(2) Iowa Tests of Educational Development (ITED)

These tests were used to measure the educational development variable. Three of the available nine tests were used in this study:

(a) Interpretation - Natural Sciences

(b) Interpretation - Social Sciences

(c) Interpretation - Literary Materials

Ellis Page, after reviewing the ITED for Buros (1965), indicated that in his opinion the test was one of the best for assessing educational development because of the philosophy and assumptions on which it is based as well as its reliability and validity. Correlations range from .40 to .70 and higher between ITED composite scores and other criteria such as rank in high school graduating class, average high school grade in specific courses, high school grade-point average, and college freshman grades. Ellis Page, in describing the reliability of the ITED, points out that within grade split-half reliabilities range from .80 to .90. Reliabilities for the composite score reach as high as .98 or .99.

The new editions have percentile rank norms based upon nation-wide testing in the Fall of 1962. One hundred thirty-six school systems were tested in 39 states to establish the norms.

(3) Student Biographical Inventory

This inventory was devised by members of the Student Counselling Services, University of Calgary to collect biographical information about the students contemplating enrollment in university under the mature non-matriculant privilege.

The Student Biographical Inventory is divided into seven sections:

(a) basic data

(b) work and social experiences

(c) educational experiences

(d) present plans and family data

(e) personal characteristics

(f) reading habits

(g) comments

There is no time limit for the completion of the inventory but it can be completed in a fifteen to twenty minute period.

Procedure

Mature non-matriculant candidates who displayed interest in enrolling in the University of Calgary were asked to write a battery of tests administered by Student Counselling Services. The CAAT and the three sub-tests of the ITED were administered and timed according to the specifications of the test manuals. Actual testing time involved approximately five hours. Testing thus required morning and afternoon participation in order to facilitate completion in one day.

The 699 students were tested over a three year period but all students who wrote the preliminary battery of tests did so before taking any university courses. Testing sessions generally involved small groups or individual testing procedure. The majority of the tests were written on Student Counselling premises but some testing sessions were scheduled for other buildings on campus such as the Engineering Building.

Immediately following termination of the winter session (1968-69)

a thorough examination of mature non-matriculant files was undertaken. An examination of the Registrar's files and various faculty files revealed those students who had written the preliminary battery of tests and who then proceeded to enroll in one or more courses at the University of Calgary. The group who enrolled in one or more courses was then subdivided into those who withdrew from courses and those who completed one or more courses. In this manner three groups were identified:

(a) completions

(b) pre-enrollment drop-outs

(c) post-enrollment drop-outs

Table 1

Means and Standard Deviations for CAAT, ITED, and Age Variables for Pre-enrollment Drop-outs, Post-enrollment Drop-outs and Completions

Variables	Pre-enrollment Drop-outs (337) $\bar{X}$	S.D.	Post-enrollment Drop-outs (41) $\bar{X}$	S.D.	Completions (n=321) $\bar{X}$	S.D.
CAAT- Linguistic	29.07	8.38	30.74	6.83	32.40	8.31
Math	26.59	7.71	27.63	7.63	27.03	13.85
Total	55.69	13.85	58.40	11.38	59.56	14.20
ITED- Soc. St.	50.72	14.68	56.23	13.94	56.25	13.39
Nat. Sc.	42.81	13.77	46.40	12.18	46.12	14.20
Literary	49.31	14.62	54.33	13.17	54.87	14.03
Age	31.55	7.67	30.76	7.27	32.60	7.56

Findings

Table 1 shows the means and standard deviations for all groups on

the CAAT, ITED, and age variables. Tests of significance for differences between means were done on all possible pairs. No differences were found on any of the variables between the post-enrollment drop-outs and the completions. Differences were found between the pre-enrollment and post-enrollment drop-outs on the ITED Social Sciences ($t = 2.30$, $df = 377$, $p < .05$) and the ITED Literary ($t = 2.11$, $df = 377$, $p < .05$). In both cases the means were higher for the post-enrollment drop-outs. No other differences were found. Differences between the pre-enrollment drop-outs and the completions were found on almost all of the variables. On the CAAT Linguistic ($t = 5.11$, $df = 656$, $p < .001$) as well as the CAAT Total ($t = 3.54$, $df = 656$, $p < .001$) completions scored higher. Completions also scored higher on all subtests of the ITED: Social Studies ($t = 4.87$, $df = 656$, $p < .001$), Natural Science ($t = 3.03$, $df = 656$, $p < .01$), and the Literary ($t = 5.00$, $df = 656$, $p < .01$). No significant differences were found with the CAAT Mathematical or age variables.

Table 2

Chi Square Analysis of Sex for All Groups

	Male	Female	Total
Post-enrollment drop-outs	25	16	41
Pre-enrollment drop-outs	197	140	337
Completions	166	155	321

$x^2 = 3.56$ (n.s. $\alpha = .05$)

Table 3

Analysis of Marital Status

	Single	Married	Divorced	Separated	Widow	Total
Post-enrollment drop-outs	16	20	2	2	1	41
Pre-enrollment drop-outs	98	210	16	6	7	337
Completions	72	220	9	11	6	318
Total	186	450	27	19	14	696

$x^2 = 12.07$ (n.s. $\alpha = .05$)

Chi square analysis of sex and marital status also showed no differences between groups (Tables 2 and 3). Tests of significance were done on differences between groups on many of the variables obtained by the Student Biographical Inventory. It was found that the following factors discriminated between the groups:

(a) formal education beyond grade 12

(b) discontinuation of formal education because of low grades

(c) influence of friends and relatives in selecting a particular field of study

(d) constant association with university people

(e) spouse with some university training

(f) spouse with professional type of occupation

(g) very supportive reaction by spouse regarding entrance to university.

In addition to these biographical factors which proved to be discriminating, other biographical information is included in tabular form in Appendix A.

Discussion and Implications

The main purpose of this study was to establish whether there were any differences between the two drop-out groups and completions in the mature non-matriculant group. A secondary purpose of this study was to assess the usefulness of the preliminary battery of tests being administered by the Student Counselling Services to candidates for the mature non-matriculant program. Ideally, completions should score higher on a battery of tests of this nature than those who will drop out for academic reasons. The research findings of this study indicate that certain tests in the battery discriminate between these groups.

The use of the Linguistic sub-test of the Cooperative Academic Ability Test should be continued as this sub-test discriminates between pre-enrollment drop-outs and completions. Completions score significantly higher than do pre-enrollment drop-outs. Even though the CAAT Total score also discriminates between completions and pre-enrollment drop-outs it could be hypothesized that the significantly higher score on the Linguistic sub-test pulls the Total score up to significance at the .05 level of confidence. Thus the CAAT Total score is not absolutely necessary for use in discriminating between pre-enrollment drop-outs and completions. The CAAT Linguistic sub-test did

not uncover any other significant differences among the three groups.

If one wanted to generalize from this study alone, then the use of the Quantitative sub-test of the Cooperative Academic Ability Test should be discontinued as this instrument did not differentiate between any of the three groups. The two sub-tests of the CAAT (Linguistic and Quantitative) when added together give the total ability score. If the quantitative test was discontinued then the total ability score would no longer be useful. For the sake of economy in administration time as well as for differentiating ability the Quantitative sub-test of the CAAT should be discontinued even though this would imply the discontinuation of the CAAT total ability score.

The Iowa Tests of Educational Development generally appear to have more discriminating power for the total group tested than the Cooperative Academic Ability Tests as a whole. Once again there were no significant differences apparent between post-enrollment drop-outs and completions. The Social Studies sub-test and the Literary Materials sub-tests depict significant difference at the .05 level of confidence between pre-enrollment and post-enrollment drop-outs.

All three sub-tests of the ITED (Social Studies, Natural Sciences, and Literary Materials) produced significant differences at the .05 level of confidence or better between completions and pre-enrollment drop-outs. The completions score significantly higher on all three sub-tests of the ITED. The three sub-tests of the ITED should be retained in the testing battery as they seem to measure what they were intended

to measure.

It is interesting to speculate on the importance of linguistic ability as a differentiating variable with mature non-matriculant students. Even the Natural Science and Social Studies sub-tests of the ITED are based on an ability in the linguistic and verbal skills. Conklin (1969) found the linguistic skills of the mature non-matriculants to be relatively highly developed as their scores were approximately equal with matriculated freshmen on linguistic skill but significantly lower on the quantitative skills. Mature non-matriculants appear to largely limit themselves to faculties where linguistic ability is perhaps the chief skill utilized. Approximately 76 percent of the mature non-matriculants enrolled in either the Faculty of Arts and Science or the Faculty of Education. The 76 percent is nearly equally divided between the two faculties cited above. The remaining 24 percent is divided into the Faculties of Business, Fine Arts, Physical Education and Engineering.

Several possibilities exist for the maintenance of a reasonably high standard of lingistic ability:

1) Linguistic skills such as reading and oral communication are necessary in daily living and working. Thus they are maintained or further developed Highly developed quantitative skills are not as essential as linguistic skills in dealing with the environment in which we live. After formal schooling is completed many of the quantitative skills are not used or

further developed.

2) The majority of the completions were previously employed in clerical or other types of occupations such as sales or other office-type related jobs where linguistic ability was necessary and a minimal amount of quantitative ability was sufficient.

An interesting research finding in this study was that post-enrollment drop-outs and completions scored relatively the same on the complete CAAT and ITED. There were no significant differences on any of the six scores involved on the above-mentioned tests. There were more significant differences between the drop-out groups (on the Literary Materials and the Social Studies sub-tests of the ITED) than between post-enrollment drop-outs and completions. One explanation for this may be that post-enrollment drop-outs are approximately equal with completions in academic ability and educational development but dropped out of university for other reasons rather than for academic ability ones. Perhaps for the post-enrollment drop-outs a year at university is just a desired departure from their normal existence for a short period. Financial reasons and adjustment to the university setting may be other factors involved. If the number of courses enrolled in per year are an indicator of a commitment to a university education then the completions could be described in this manner. Approximately seventy-five percent of the completions enroll in three or more courses per year. Many of those who are post-enrollment drop-outs initially enroll in one or two subjects.

A sample of completions was interviewed during July, 1969. Many expressed the idea that remedial work in study and reading skills could have been of assistance in their adjustment to university. These skills had to be redeveloped and improved due to the time lapse in educational adventures. Perhaps the university could offer remedial assistance in these two areas. This would lessen the adjustment problem and be beneficial to the adult non-matriculants who are weak in these areas.

Another question arises from the research findings of the comparison of the three groups on the discriminating (significant at the .05 level) sub-tests of the CAAT and the ITED. Why did the pre-enrollment drop-outs not attempt to enroll in any university courses? Perhaps they felt their test scores were significantly lower or they may have found the tests somewhat difficult and felt these were indicative of university work, thereby meaning they would have a great deal of trouble coping. Whatever their reasons, they instituted a self-withdrawal procedure. Rather than the university having to decide on their qualifications for admittance, this group decided on their own not to enroll. The test scores indicate that the majority of this group would have probably had difficulty if they had attempted university courses.

There was no significant difference in the ages among the three groups. Age in this case of the mature non-matriculant does not appear to be a discriminating factor. Age in this sample did not indicate whether the individuals would complete or drop out. The average age of

completions, even though it wasn't significant, tended to be somewhat older. An interesting point is that the minimum age requirements for this program are 23 or 25 or over depending on faculty requirements, the mean age for all three groups is well above this, ranging from 30 to 32 years of age. Perhaps below the 23-25 age range age would be a discriminating factor but above this range age becomes unimportant as a discriminating factor. It appears that the age requirements are satisfactory as there does not seem as much demand for this program among people in their early twenties as by those in the later twenties to early forties.

The sex variable does not seem to have any influence in discriminating between drop-outs and completions in the total sample. Even though the males slightly outnumber the females in the total sample, the difference does not prove to be significant among the groups. Sex does not give us any information with regard to who will complete and who will drop out of the mature non-matriculant program.

Marital status has often been cited as being indicative of completion or withdrawal in educational pursuits. The married individual is usually thought of as being more stable and more achievement motivated because of family responsibilities. If this was the case, it could be hypothesized that the married individuals would be heavily weighted in the completion group. However, this is not the case in this sample as marital status did not seem to affect membership significantly in any of the three groups analyzed, but it is interesting to note that the

majority of the total group was married.

The biographical information analyzed utilizing the significance of the difference between two independent proportions supplied data which discriminated between the groups:

1) Formal education beyond grade 12 discriminated between pre-enrollment drop-outs and completions. This indicates that individuals with formal education beyond the grade 12 level will likely be more successful at university.
2) Those individuals who leave school initially because of low grades will probably have less chance of success at university than those who discontinue their formal education for other reasons.
3) The influence of friends and relatives as well as association with university people appears to be a determining factor for individuals to attend university and a factor in their selection of faculties. This finding tends to emphasize the importance of significant others in the environment in relation to university enrollment.
4) The spouse appears to play an important role in university completion. If the spouse has some university training then this becomes a factor which bears on whether the mate will complete some university training. The chances are greater for completions if the mate has had some university training. The

same relationship as above applies if the spouse has a professional type of occupation. Completion of some university training seems to be related to the amount of support given by the spouse with regards to initial university entrance. In this respect, marital status does appear to have some effect on the completion and the drop-out.

The biographical information uncovered other trends which can be speculated upon but do definite conclusions can be reached:

1) There was a trend for more completions to belong to at least one social organization in comparison to the two drop-out groups. Perhaps the completions are more social in nature than the other two groups.

2) There was a trend for more completions than either of the two drop-out groups to leave high school initially because they believed they had enough education at that time. Perhaps basically the completions had more academic talent but left high school for other reasons such as the one stated above.

3) Three times as many post-enrollment drop-outs when compared to completions rated their work speed as being faster than most. Perhaps the post-enrollment drop-outs are over-estimating their ability.

The usefulness of the total Biographical Information Inventory is difficult to evaluate. Generally measured by percentages, there was homogeneity of responses to many of the items by all three groups. This

indicates two possibilities -- either the total group is relatively homogeneous with regards to biographical background or that the Biographical Information Inventory is not measuring what it purports to measure. Subjective individual interpretation of some items on the Inventory and the validity of some items are debatable. Thus it is difficult to put forward many firm conclusions or hypotheses about the data collected on this Inventory. The most important value of the Inventory is that it does provide a certain amount of biographical information which provides descriptive materials characterizing the total group.

Certain variables were found that differentiate significantly between those who persist in university and those who do not persist in university. Admittance policies may be clarified and standardized to a certain extent as now the faculties will be able to place more weight on the discriminating sub-tests of the CAAT and ITED when admittance of an individual is in doubt. The mature non-matriculant candidates themselves should benefit as now the test results and their implications can be interpreted more meaningfully to them as more data is now available on the scores of completions and drop-outs who have taken these tests. The mature non-matriculant program has opened a new avenue in adult education and presumably this study has suggested some discriminating variables as well as descriptive information to be used in the propagation of this program.

Method - Study B

Sample

In Study A all aspirants were tested but in this study it was decided to only test and investigate predictor variables for the "successful" group of mature non-matriculant students.

Instruments

These 320 students had already completed a biographical information sheet as well as three subtests of the ITED battery and the CAAT. It was decided to supplement this information with a study habits and attitude survey, a need achievement test, a personality test and a values scale.

(1) Brown Holtzman Study Habits and Attitude Survey

This scale emanated from discussions with college freshmen regarding the differences in motivation between good and poor students. Items are of two types: those which deal with the mechanics of study and those which deal primarily with attitude towards study. The final version of 75 items has correlations with grade point average varying from .27 to .66. The manual reports that correlations between the SSHA and academic aptitude is low, therefore resulting in the premise that the SSHA measures a trait or traits which are not assessed by a scholastic aptitude test.

(2) McLelland's need achievement

Four cards from the Thematic Apperception Test were utilized for

the need achievement measure. McLelland (1953) himself outlines how to score responses to these pictures in order to obtain an assessment of need achievement. The scoring and administration is complex, requiring special training. The cards are presented one at a time to the subjects who are asked to make up a story which "fits" each card. The cards are selected for their emphasis on need achievement themes.

(3) Study of Values

This test purports to measure six basic interests or motives in personality: the theoretical, economic, aesthetic, social, political, and religious. It is based on the assumption that the personalities of men are best known through a study of their values or evaluative attitudes. The scale is self-scoring, has no time limit and is designed primarily for use with college students or with adults who have had some college. The mean repeat reliability coefficient was .89 for a month intefval and .88 for the two month interval. The most convincing evidence of the test's validity is that groups which from common experience should be high on one of the scales tend to score higher than other groups.

(4) Edwards Personal Preference Schedule

This test yields scores for 15 relatively independent normal personality variables. It is used primarily for counseling and research purposes. Norms are available for both college populations and general adults. Test-retest reliabilities with a one week interval range from .74 to .88 for the 15 scales. The manual reports several studies which

indicate that the EPPS is a valid instrument. The test consists of 225 pairs of questions which forces the person taking the test to choose between them. There is no time limit.

Procedure

The tests were administered to the students in groups, the largest of which numbered ten. Even though three researchers were involved the order and the method of the administration of these tests was completely standardized. (See Appendix B) After the administration of the four tests, a group discussion with the students followed. Recommendations and suggestions pertaining to the Mature Non-Matriculant program were solicited.

Results

(1) Biographical Information.

An analysis of the biographical information questionnaire revealed that twenty items could be considered continuous variables. The student's grade point average was considered to be the criterion variable. Correlation coefficients were obtained between these twenty predictor variables and the grade point average. (See Appendix C)

Two of these predictors had correlation coefficients in excess of .266 which means that they were significant at the $> .01$ level. These items were numbers 49 and 50 from the questionnaire. Item 49 asked the student to give an indication of the variety of material that he or she generally reads. This item had a correlation of -.395 with grade point

average. One interpretation of this might be that those students who devote a great amount of time to reading in a very narrow field are the ones who are most successful in university.

Item number 50 asks the student to check the number of books read per month. A positive correlation of .304 seemed to indicate that the greater number of books read the higher the marks at university. It would appear that those people who read a greater amount on a narrow range of topics are those who seem to get the best grades at university.

There were six other items in the biographical information sheet which had correlation coefficients ranging between .205 and .266. This means that they were significant at the .05 level or more. The first of these items was number 9, which asked the respondents to indicate the number of different jobs they had held before making application to university. Here the correlation coefficient was -.209; or, the fewer jobs held the better the chance for success at school. One could perhaps assume that those who were more stable in their job situations were more likely to do well in a university setting.

Item number 33, the amount of support that the student had from his or her spouse in their educational pursuits, yielded a positive correlation of .209 with grade point average. At least some of the implications of such a relationship seem obvious.

The amount of time devoted to reading (item number 48) yielded a correlation of .266 with grade point average. This would be expected when we consider the results of item 50. Those students who have

followed good reading habits throughout their life would seem to have a greater chance of success at university. This is evidenced by the result of item 56. Here the "amount of reading done when young" correlated .221 with grade point average.

Item number 54, the extent to which one read the daily newspaper was also significant at the .05 level, with a correlation of .226 with grade point average.

It is obvious that reading habits established by the student previous to his actual enrollment are very important considerations in predicting success at university. Previous job stability as well as the support of spouse would appear to be important factors as well.

(2) Cooperative Academic Ability Test (CAAT).

This standardized test yields scores on two scales, a linguistic scale and a quantitative scale. These scores are then combined to yield a total score. The most important of these scales for mature non-matriculant students would appear to be the linguistic scale. This scale is also reflected in the total score of the test. The correlation between the linguistic scale and grade point average was .333, significant at more than the .01 level. The total score is also significant at the .01 level with a correlation of .267.

The importance of language usage is apparently an important factor in success at university -- much more important than the student's quantitative ability as measured by the mathematical part of the CAAT.

(3) Iowa Test of Educational Development.

Three subtests of the Iowa Tests of Educational Development were used in assessing those who applied for registration under the Mature Non-Matriculant program. The subtests used were those which are designed to measure the level of development of the student in the areas of social studies, natural sciences, and literary skills.

All three of these subtests yielded scores which were significant at more than the .01 level. The literary material subtest had the highest correlation (r = .375). The natural science scores correlated at .320 and the social studies at .290.

The importance of reading is once more emphasized.

(4) Edward's Personal Preference Schedule.

Non-intellectual factors would appear to have some bearing on who will do well at university. Of all sixteen scales on which the student may receive scores on the Edward's Personal Preference Schedule, only the Exhibition scale yielded a correlation which was significant at more than the .05 level. Apparently those students who find it desirable to be the focus of attention find that one way of gaining this attention is by getting high grades at university.

(5) Study of Values.

Of six possible scales only the Economic scale had scores which correlated at a level which was significant. The correlation was -.236, significant at the .05 level. Apparently those who are less concerned with economic values are more likely to succeed at university.

(6) Brown-Holtzman Study Habits and Attitudes.

The scores yielded by this test were significant with grade point average at the .01 level. Those students who display the better study habits do better in school.

(7) McClelland Need Achievement Scale.

None of the McLelland scores were significantly related to success at university.

Sex Differences

The non-intellectual factors were examined in the light of sex differences. (See Appendix D) The McClelland Need Achievement Scale was not a significant predictor, however, the same was not true for the Edward's Personal Preference Schedule or the Allport-Vernon Study of Values.

The Edward's Personal Preference Schedule yielded scores on the Deference scale, the Exhibition scale and the Consistency scale which were significantly related to grade point average at the $>$ .01 level for the females, but are not significant at all for the males. The opposite is true for the Autonomy and the Abasement scales ($r = .272$, $-.481$).

A similar pattern can be seen for the Study of Values questionnaire. The Economic and Aesthetic scales are significantly correlated with grade point average for the males but not for the females. For the females only, the Theoretical scale is significantly correlated with grade point average.

Attenders Versus Non-Attenders

It was felt that it might be revealing to compare the group of students who were successful at university with those students who applied for admission but who never attended. (See Appendix E) This aspect of the study did not, however, appear to be too fruitful. Only one score showed a significant difference between the two groups, that yielded by the Brown-Holtzman Study Habits and Values. Apparently those applicants who have better study habits and attitudes are more likely to go on to attend university than are those who do not. Perhaps it is safe to say that there seems to be a process of self-selection which takes place before these people make the final step in actually attending university. If this is so, then those who do not possess the necessary study habits or who do not have a desirable attitude may be eliminating themselves before they start.

Linear Regression Equation

In predicting which students are going to be successful in this program, the best possible combination of predictor variables is desirable. In order to gain this best possible predictive equation a step-wise multiple linear regression analysis was used. All predictor variables which had reached the .05 level of significance were included -- a total of 27 predictor variables with the criterion of grade point average.

When these 27 variables were combined, a total of 9 variables

contributed to a predictive equation which had a multiple correlation of 0.6099. The resulting equation accounts for approximately 37% of the variance in predicting the success of students entering the university under the Mature Non-Matriculation program.

Table I contains a list of the 9 variables which were used in the multiple regression equation as well as the weighting assigned to each.

Table 1

Variable	Multiple R
ITED - Literary Material scale	0.4323
CAAT - Linguistic scale	0.4797
Study of Values - Economic scale	0.5185
EPPS - Autonomy scale	0.5434
Item number 9 - number of jobs held	0.5636
Item number 54 - extent to which you read the daily newspaper	0.5817
Item number 33 - support of spouse	0.5925
Grade 12 average on subjects taken	0.6008
Study of Values - Theoretical scale	0.6099

Group Sessions

As was mentioned previously, the testing was done with groups of students wherever possible. After each of these testing sessions an attempt was made to solicit an opinion and/or suggestions from the students as to how they felt the existing program could be improved.

Part-time students had a great many suggestions dealing with evening classes. Many felt a need for a greater variety of courses to be offered in the evening, particularly third and fourth year courses and courses with laboratory work attached. There were suggestions for more early morning and late afternoon classes. Many housewives felt that there was less need for late afternoon classes but a greater need for clases spread over more evenings, rather than the majority only being offered on Tuesday and Thursday evenings. A few students felt that it would be beneficial if some courses could be offered during the summer evenings on a basis similar to the summer session day courses. Others suggested that the compulsory year of residence be done away with, particularly in the case of adult students who usually have a family and find it necessary to work during the day. Some felt that it was unfair to limit a student to only 5 courses per year, if he was capable of taking more.

Many students felt a need for a more clearly stated admission policy in the case of the Mature Non-Matriculant student. They see this as a very important part of their lives and sometimes feel frustrated by a policy which often is unstated and appear nebulous to them. Several students were under the impression that the standardized tests that they were asked to sit for at the Student Counselling Services were in fact a form of "entrance examination."

One student said that he felt the Mature Non-Matriculant group would get more from university if they were placed in common classes

wherever possible. Two others felt a need for an undergraduate degree program in special education. One student complained about the tuition fee for individual courses as compared to tuition fees for a full year, while another student complained about the absence of professors from classes.

The students were almost unanimous in their agreement that the university has a need for some form of orientation program for students. They felt that there were many services, such as the Student Counselling Services, with which they were not familiar. Few, for example, were at all familiar with the sort of assistance they could expect to obtain from counselling.

Implications

This author feels that these suggestions leave a good many avenues open for further investigation for the university. An obvious area for consideration is the charge of a lack of orientation. This research has clearly shown reading habits are perhaps the single most important factor contributing to student success at university. A good many of these students found this to be their greatest problem facing them at university, but when asked why they did not take advantage of the programmed reading instruction available at Student Counselling Services, not one student was aware that such a service was in existence.

Obviously these students could be assisted in many areas. Group sessions for university orientation, remedial and speed reading courses,

instruction and guidance in the area of study habits are only a few areas. Because the support of the spouse seems to be an important factor, group sessions for husbands and wives of adult students could be conducted in order to help these students cope with a new environment.

Future Research

This study points to many areas where future research would be of value. Particularly of interest are such areas as personality differences as far as successful and unsuccessful students are concerned. This study only hints at the fact that such differences do exist. If this is so, and if such personality attributes such as autonomy do lead to success at university then counselling could be involved in helping to develop such behavior patterns in students.

Sex differences is another area where more research is necessary. Who are the more successful? If one group is more successful then why is this so? Do female students have different problems than male students? There are a good many questions which remain to be answered.

What of students entering different faculties? Are Mature Non-Matriculant students more successful in some faculties than in others?

What of the part-time student as opposed to the full-time student? Do they do as well? If not why not?

The drop-outs are an obvious area for research. Why do some adults who undertake such a dramatic step as leaving their job, quit university before completing their objective? Is money the answer, or

is it just too great a change for some to adjust to? Follow-up studies would seem to be a necessary part of such a program, in order to determine why some students "dropped out" or discontinued prematurely.

References

Buros, O. K. (Ed.) The sixth mental measurements yearbook. Highland Park, N. J.: Gryphon Press, 1965.

Conklin, R. C. Facts and figures concerning mature non-matriculant students at the University of Calgary. Student Counselling Services Research Bulletin, 1969, 3.

Mann, W. E. Adult drop-outs. Continuous Learning, 1966, 5, 55-65 and 127-143.

McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. The Achievement Motive. New York: Appleton-Century-Crofts, 1953.

Pipher, J. A. Barrier to university—a study of students prevented from or delayed in attending university. Report No. 8. Atkinson Study of Utilization of Student Resources, 1962.

Sainty, G. E. Some predictors of success in a course for academic upgrading of adults at a Canadian vocational training center. Unpublished master's dissertation, University of Calgary, 1968.

Vaselenak, Mette M. Admission of mature students into the Faculty of Education, the University of Calgary. Unpublished report, University of Calgary, 1968.

APPENDIX A

BIOGRAPHICAL DATA TABLES

Table A-1

Types of Work Experience

Number of Jobs	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
0	0	0	0
1	4.88	6.82	8.41
2	19.51	15.13	14.95
3	17.07	19.29	19.31
4	21.95	18.10	17.45
5	9.76	14.54	13.40
6	7.32	9.79	12.77
7	4.88	7.72	6.23
8	7.32	2.08	4.67
9	4.88	3.56	1.56
10	0	1.78	0.62
11	2.44	0.59	0
12	0	0	0
13	0	0.30	0
14	0	0.30	0
no information	0	0	0.31

Table A-2

Number of Types of Social Organizations in Which Individuals Participated

Number of Types	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
0	12.20	12.46	7.79
1	36.59	35.31	34.58
2	31.70	30.86	33.96
3	14.63	12.76	15.58
4	4.88	6.23	6.23
5	0	0.89	1.25
no information	0	0	0.62

Table A-3

Number of Different Scholastic Positions Held

Number of Positions	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
0	26.83	32.05	32.71
1	34.15	32.94	26.17
2	24.39	15.43	20.87
3	4.88	12.17	9.97
4	7.32	3.26	5.61
5	2.44	2.37	2.49
6	0	1.19	1.25
7	0	0	0.31
8	0	0.30	0.31
no information	0	0	0.31

Table A-4

Number of Activities Engaged in While Spending Leisure Time

Number of Activities	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
1	4.88	0.59	1.56
2	4.88	7.42	5.92
3	14.63	15.13	13.08
4	34.15	19.29	19.31
5	2.44	16.62	17.76
6	19.51	15.13	19.63
7	4.88	10.39	10.90
8	7.32	8.61	5.30
9	4.88	2.97	4.05
10	2.44	2.08	0.62
11	0	0.89	1.25
12	0	0.59	0
no information	0	0.30	0.62

Table A-5

Number of Different Types of Television and Radio Programs

Number of Types	Post enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
1	4.88	2.37	0.93
2	9.76	6.82	6.85
3	21.95	15.43	16.51
4	19.51	21.36	17.45
5	12.20	20.18	21.50
6	9.76	13.06	17.57
7	14.63	8.61	9.35
8	2.44	5.04	4.98
9	2.44	4.75	2.49
10	0	0.89	0.31
11	2.44	0.59	0.31
12	0	0	0
13	0	0.59	0
no information	0	0	1.56

Table A-6

Places Received Schooling

Places	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Alberta	63.41	62.02	60.75
Outside Alberta but Canada	19.51	22.55	22.19
Other	17.07	15.43	16.82
no information	0	0	0.30

Table A-7

Number of Rooms in School Attended

Number of Rooms	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
1	0	1.19	1.56
2	0	2.97	0.93
4-6	4.88	4.15	5.61
7-10	7.32	5.93	8.41
over 10	85.37	85.77	81.93
no information	2.44	0	1.56

Table A-8

Amount of Formal Education

Level of Education	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Less than grade 9	0	1.19	0.93
Complete grade 9	2.44	2.97	4.67
Complete grade 10	7.32	10.98	9.35
Complete grade 11	19.51	27.00	18.38
Complete grade 12	28.63	22.26	20.87
Beyond grade 12	2.44	7.12	9.35
Other	41.46	27.89	32.71
No information	0	1.48	0.62

Table A-9

Age (in Years) When Completed Last Year of Formal Education

Age	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Less than 14	0	1.48	1.56
15-16	21.95	20.18	22.43
17-18	46.34	43.92	40.19
19 or older	29.27	32.94	33.33
no information	2.44	1.48	2.49

Table A-10

Why Discontinued Formal Education

Reasons	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Finances	21.95	0.30	19.31
Personal Problems	14.63	11.57	12.77
Disinterest in School	9.76	8.01	6.85
Family pressure to Work	4.88	8.01	7.17
Had enough education	21.95	23.74	28.04
Marriage	4.88	6.82	6.85
Low grades	7.32	4.15	1.87
Other	14.63	15.43	16.51
no information	0	0.30	0.62

Table A-11

Most Recent Completion of
Correspondence Course, etc.

Time since	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Continuing	21.95	19.88	24.30
Less than 3 mos.	12.20	4.75	6.23
3 mos.-1 yr.	2.44	11.28	8.72
2 - 5 yrs.	7.32	9.20	9.03
6 - 10 yrs.	2.44	2.37	1.56
More than 10 yrs.	4.88	1.19	1.87
Never taken any	46.34	49.26	45.79
No information	2.44	2.37	2.49

Table A-12

When Did the Student Decide
to Attend University

Reasons	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Always wanted to	46.34	42.73	44.55
Since working	17.07	14.84	12.15
Encouraged by Others	4.88	2.37	2.18
Combination of Circumstances	21.95	32.34	32.09
Other	12.20	7.71	7.79
No information	2.44	0.89	1.25

Table A-13

Main Reason for Desiring University Education

Reason	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Self-enrichment	17.07	14.84	17.13
Qualification for special occupation	34.15	37.69	38.63
Broaden occupational possibilities	4.88	3.86	5.61
Job satisfaction in future	43.90	40.65	35.83
Other	0	2.67	2.49
No information	0	0.30	0.31

Table A-14

Reasons for Selecting Particular Field of Study

Reasons	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Personal interest	90.24	74.78	79.75
Influence of parents	0	0.89	0.31
Influence of friends or relatives	2.44	2.37	11.53
Employment opportunities	0	14.24	3.43
Other	7.32	5.93	4.36
No information	0	1.78	0.62

Table A-15

Amount of Association with University People

Amount	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Constant	56.10	45.40	49.22
Frequent	21.95	26.11	29.28
Some	14.63	17.80	13.71
Very little	4.88	8.31	5.30
None	2.44	2.08	1.25
No information	0	0.30	1.25

Table A-16

Level of Education Attained by Father

Level of Education	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Grade 8 or less	36.59	40.36	37.38
Some high school	26.83	24.93	29.28
High school graduate	14.63	12.46	11.21
Some university or college	14.63	7.12	6.23
University graduate	2.44	7.12	7.17
Other	4.88	5.34	5.61
No information	0	2.67	3.12

Table A-17

Father's Occupation

Type of Occupation	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Labor	36.59	35.01	30.22
Clerical or sales	7.32	6.23	8.10
Service	7.32	5.93	4.67
Managerial	12.20	22.26	21.18
Professional	12.20	7.72	10.28
Technical	2.44	3.56	4.67
Agriculture	21.95	17.80	19.94
No information	0	1.48	0.93

Table A-18

Number of Different Types of Father's Activities

Number of Types	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
0	7.32	3.26	2.18
1	31.71	35.31	36.45
2	26.83	16.91	22.74
3	12.20	19.29	19.94
4	14.63	11.28	9.66
5	0	5.04	2.80
6	2.44	3.26	2.18
7	2.44	2.08	0
8	0	1.19	0.93
9	0	0	0.93
10	0	0	0
11	0	0.30	0
No information	2.44	2.08	2.18

Table A-19

Level of Mother's Education

Level of Education	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Grade 8 or less	26.83	30.56	29.28
Some high school	41.46	34.42	30.53
High school graduate	9.76	16.32	14.64
Some university	12.20	6.82	10.59
University graduate	0	1.19	3.43
Other	9.76	7.42	8.72
No information	0	3.26	2.80

Table A-20

Mother's Occupation

Occupation	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Housekeeping only	53.66	53.71	52.02
Professional	9.76	9.20	11.21
Clerk or secretary	21.95	19.29	18.07
Factory worker	0	2.67	3.43
Other	14.63	13.06	13.71
No information	0	2.08	1.56

Table A-21

Educational Level of Spouse

Level of Education	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Grade 8 or less	2.44	3.26	1.56
Some high school	26.83	22.26	17.13
High school graduate	12.20	16.32	17.76
Some university	4.88	9.20	14.33
University graduate	9.76	11.57	16.82
Other	4.88	7.72	7.48
Not married	39.02	29.08	23.68
No information	0	0.59	1.25

Table A-22

Occupation of Spouse

Occupation	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Labor	14.63	9.50	6.54
Clerical and sales	7.32	19.58	13.08
Service	0	0.59	1.87
Managerial	2.44	10.09	10.90
Professional	17.07	14.84	35.20
Technical	9.76	3.86	6.23
Agriculture	2.44	2.08	0.93
Not married	39.02	29.97	24.30
Other	7.32	7.12	11.21
No information	0	2.37	0.62

Table A-23

Spouse Reaction About Going Back to University

Reaction	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Very supportive	41.46	49.85	57.32
Somewhat supportive	12.20	10.10	11.21
Indifferent undecided	2.44	1.48	0.62
Worried about consequences	0	1.48	0.62
Disagrees	0	0.59	0.31
Not married	43.90	34.12	26.48
No information	0	2.37	3.43

Table A-24

General State of Health

State of Health	Post-enrollment Drop-puts %	Pre-enrollment Drop-outs %	Completions %
Exceptionally good	53.66	43.62	48.91
Few minor illnesses	26.83	35.61	34.89
Average	17.07	17.21	12.15
Somewhat of a handicap	2.44	1.78	2.49
Handicap	0	0.59	0.62
No information	0	1.19	0.93

Table A-25

Reaction to School Material

Reaction	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Often needed more explanation	7.32	3.26	3.43
Sometimes needed more explanation	48.78	44.51	40.81
Usually adequate explanation	39.02	45.40	47.98
Don't remember	4.88	5.93	6.54
No information	0	0.89	1.25

Table A-26

Work Speed

Speed of Work	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Much faster than most	9.76	3.26	2.49
Somewhat faster than most	34.15	34.42	38.01
Average	48.78	51.63	46.73
Somewhat slower	4.88	8.01	9.97
Much slower	0	0.30	0
Undecided	0	2.08	1.25
No information	0	0.30	1.56

Table A-27

Reaction to Competition

Reaction	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Profited from and liked it	63.41	61.43	59.19
Unaffected	9.76	13.06	10.90
Profited but didn't like it	19.51	16.02	14.33
Undecided	7.32	8.31	12.77
No information	0	1.19	2.80

Table A-28

Patterns of Reading

Patterns of Reading	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Much time	47.50	41.25	51.09
Considerable time	7.32	9.79	8.41
Little time	39.02	40.95	35.83
Necessary time only	7.32	7.12	2.49
Seldom	0	0.30	0
No information	0	0.59	2.18

Table A-29

Description of Reading Material

Description	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Varied	70.73	64.99	67.29
All but technical	9.76	16.32	19.00
Non-fiction history, science	7.32	8.30	5.61
Current fiction	2.44	1.48	1.25
Classics	0	0.30	0.31
Poetry	0	0	0
Technical and theoretical	17.07	3.26	2.49
Areas of immediate interest	0	2.37	1.56
Other	2.44	2.08	0.62
No information	0	0.89	1.87

Table A-30

Books Read per Month

Number of Books	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Less than 1	14.63	25.22	13.40
1 or 2	41.46	39.76	42.06
3 or 4	41.46	39.76	42.06
More than 4	14.63	12.46	17.13
No information	0	1.78	2.18

Table A-31

Number of Books in Home

Number of Books	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Large library	17.07	5.04	9.03
Several bookcases	29.27	44.51	49.53
One bookcase	36.59	35.31	34.58
Few	17.07	14.24	4.67
No information	0	0.89	2.18

Table A-32

Time Spent Reading Technical and Professional Material

Time in hr./wk.	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
0	2.44	4.75	11.21
Less than 1 hr.	24.39	18.40	15.26
1 - 3 hr.	21.95	37.98	34.58
4 - 7 hr.	41.46	24.04	23.05
7 hrs. plus	7.31	14.24	22.74
No information	2.44	0.59	2.49

Table A-33

Number of Different Types of Magazines Read

Number of Types	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
0	7.32	4.15	3.12
1	24.39	27.30	20.87
2	21.95	31.16	27.73
3	26.83	18.40	26.79
4	9.76	11.87	13.08
5	7.32	4.45	4.67
6	2.44	1.19	1.56
7	0	0.30	0.62
8	0	0.30	0
9	0	0.30	0
10	0	0	0
No information	0	0.59	1.56

Table A-34

Extent of Daily Newspaper Reading

Extent	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
1 or more per day	36.56	34.72	42.37
Part of 1 per day	48.78	44.51	36.76
2 or 3 times per week	9.76	6.53	5.61
Parts of more than 1 each day	4.88	9.79	11.53
Seldom	0	3.26	2.18
Never	0	1.19	1.56

Table A-35

Amount of Reading Besides School Work
Done when Young

Amount of Reading	Post-enrollment Drop-outs %	Pre-enrollment Drop-outs %	Completions %
Read everything could understand	29.27	18.40	23.99
Large amount	41.46	37.39	41.74
Occasionally	21.95	33.83	24.92
Lack of opportunity	0	5.34	4.05
Seldom or never	7.32	4.45	2.80
No information	0	0.59	2.49

APPENDIX B

Make sure that there are enough test booklets and answer sheets and pencils on hand for the group you are testing.

Have everyone comfortably seated with pencil. Thank everyone for coming in. Start by handing out work and university experience sheets and have them fill them in together. Gather them.

Hand out EPPS booklets and answer sheets and have them put names on answer sheets. Have them follow you as you read the directions. Ask if there are any questions. Tell them to go ahead and work as quickly as possible. Gather the books and answer sheets when they are finished.

Hand out the Brown-Holtzman Study Habits Booklets and answer sheets. Have them put their names on the answer sheets. Read the directions starting at the second paragraph on the front cover of the booklet. Ask if there are any questions. Tell them to go ahead and work as quickly as possible. Gather the answer sheets and test booklets when they are finished.

Distribute the Study of Values Booklets and have them put their names on them. Explain that the questionnaire is divided into two halves, the first containing 30 questions and the second containing 15 questions. It is felt that the directions are easy to follow and you may start on your own. If there are any questions, just raise your hand. Complete the questionnaire as quickly as you can but do not bother with the scoring at the end. Gather the booklets.

Have TAT pictures, stop watch and answer sheets on hand for the TAT. Take a position at the head of the table with the picture face down with 1 at the bottom, 13 MF next, 14 next and 2 at the top. Hand out 4 of the answer sheets and have them put their names on the top one. Read the following instructions (McClelland, P. 98).

> This is a test of your creative imagination. I will hold up a number of pictures before you. You will have 20 sec. to look at the picture and then about 4 minutes to make up a story about it. Notice that there is one page for each picture. The same four questions are asked. They will guide your thinking and enable you to cover all the elements of a plot in the time allotted. Plan to spend about a minute on each question. I will keep time and tell you when it is about time to go on to the next question for each story. You will have a little time to finish your story before the next picture is shown.

Obviously, there are no right or wrong answers, so you may feel free to make up any story about the pictures that you choose. Try to make up any kind of a story about the pictures. Try to make them vivid and dramatic, for this is a test of creative imagination. Do not merely describe the picture that you see. Tell a story about it. Work as fast as you can in order to finish in time. Make them interesting. Are there any questions? If you need more space for any reason, use the reverse side.

Procedure:

A picture is held up for 20 seconds and the subjects begin to write. The experimenter keeps time and after a minute has been allowed for each question say, "All right, it's time to go on to the next question." When the subjects have been writing for 30 seconds on the last question, the experimenter should say, "Try to finish up in 30 seconds." At the end of the final minute, begin to prepare for the next picture, allowing no more than 15 seconds more than the required time for finishing the stories. The next picture is then shown for 20 seconds and so on without interruption until all four stories have been written.

APPENDIX C

Correlation Coefficients Between Continuous Predictor Variables and the Criterion Variables

Item Number	Predictor Variables	Correlation	Level of Significance
(9)	Number of jobs held	-.209	> .05
(10)	Number of social organizations to which they have belonged	-.03	Not significant
(11)	Number of scholastic positions held	-.06	Not significant
(12)	Number of leisure time activities participated in	.06	Not significant
(16)	Amount of formal education	.06	Not significant
(17)	Age when completed formal education	-.10	Not significant
(25)	Closeness of association with people involved with a university	-.17	Not significant
(26)	Amount of education of father	.10	Not significant
(29)	Amount of education of mother	.06	Not significant
(33)	Support of spouse concerning attendance	+.209	> .05
(37)	General state of health	.084	Not significant
(38)	Action regarding risk taking	.006	Not significant
(48)	Amount of time devoted to reading	.226	> .05
(49)	Variety of material read	-.395	> .01
(50)	Number of books read per month	.304	> .01
(51)	Number of books in the home	+.101	Not significant
(52)	Amount of time spent reading technical or professional magazines or books	-.108	Not significant
(53)	Number of magazines read regularly	.114	Not significant
(54)	Extent that you read the daily newspaper	.226	> .05
(56)	Amount of reading done when young	.221	> .05

Correlation Coefficients Between Continuous Predictor Variables and the Criterion Variables

Predictor Variables	Correlation	Level of Significance
Cooperative Academic Ability Test		
Linguistic Scale	.333	> .01
Quantitative Scale	.175	Not significant
Total	.267	> .01
Iowa Test of Educational Development		
Social Studies	.290	> .01
Natural Science	.320	> .01
Literary Material	.375	> .01
Edward's Personal Preference Schedule		
Achievement	-.053	Not significant
Deference	-.057	Not significant
Order	.026	Not significant
Exhibition	.217	>.05
Autonomy	.159	Not significant
Affiliation	-.022	Not significant
Intraception	.040	Not significant
Succorance	-.062	Not significant
Dominance	-.161	Not significant
Abasement	-.174	Not significant
Nurturance	.025	Not significant
Change	.077	Not significant
Endurance	-.109	Not significant
Heterosexuality	.119	Not significant
Aggression	.102	Not significant
Consistency	.178	Not significant
Study of Values		
Theoretical	.075	Not significant
Economical	-.236	> .05
Aesthetic	.166	Not significant
Social	.101	Not significant
Political	-.015	Not significant
Religious	.046	Not significant
Brown-Holtzman Study		
Habits and Attitudes	.289	> .01
McClelland Need Achievement Scale		
	.083	Not significant

APPENDIX D

Correlation Coefficients Between Continuous Predictor Variables and the Predictor Criterion Variable (G.P.A.) by Sex Differences

Predictor Variables	Correlation		Level of Significance	
	Male	Female	Male	Female
Edward's Personal Preference Schedule				
Achievement	-.021	-.016	n.s.	n.s.
Deference	.109	-.294	n.s.	.01
Order	-.004	-.024	n.s.	n.s.
Exhibition	.126	.290	n.s.	.01
Autonomy	.272	.172	.01	n.s.
Affiliation	-.045	-.041	n.s.	n.s.
Intraception	.085	-.042	n.s.	n.s.
Succorance	-.064	-.158	n.s.	n.s.
Dominance	-.102	-.082	n.s.	n.s.
Abasement	-.481	-.032	.01	n.s.
Nurturance	-.021	.045	n.s.	n.s.
Change	.117	.070	n.s.	n.s.
Endurance	-.121	-.107	n.s.	n.s.
Heterosexuality	.170	.136	n.s.	n.s.
Aggression	.093	.183	n.s.	n.s.
Consistency	-.102	.409	n.s.	.01
Brown-Holtzman Study				
Habits and Attitudes	.300	.283	.01	.01
McClelland Need Achievement Scale				
	.145	.025	n.s.	n.s.
Study of Values				
Theoretical	.023	.233	n.s.	.05
Economical	-.350	-.086	.01	n.s.
Aesthetic	.242	.019	.05	n.s.
Social	-.033	.202	n.s.	n.s.
Political	.168	-.016	n.s.	n.s.
Religious	.060	-.090	n.s.	n.s.

APPENDIX E

T Tests on New Tests Between
Total, Successful and No Shows

	Total Group N = 134	Successful N = 99	No Shows N = 35	Successful vs. No Shows
	Edward's Personal Preference Schedule			
Achievement	$\bar{X}$ = 17.4328 S.D.= 3.9896	17.4444 3.8957	17.4000 4.2440	.0562
Deference	$\bar{X}$ = 12.5672 S.D.= 4.3408	12.2727 4.3573	13.4000 4.1880	-1.3211
Order	$\bar{X}$ = 11.7463 S.D.= 4.5625	11.7172 4.4108	11.8286 4.9655	-0.1234
Exhibition	$\bar{X}$ = 13.1866 S.D.= 3.8695	13.4040 3.8558	12.5714 3.8418	1.0923
Autonomy	$\bar{X}$ = 13.3284 S.D.= 3.8975	13.4545 3.9448	12.9714 3.7377	0.6273
Affiliation	$\bar{X}$ = 13.5746 S.D.= 4.2310	13.6667 4.1047	13.3143 4.5593	0.4212
Intraception	$\bar{X}$ = 18.1194 S.D.= 4.6361	18.1212 4.8331	18.1143 4.0268	0.0075
Succorance	$\bar{X}$ = 8.6866 S.D.= 4.1885	8.6263 3.9147	8.8571 4.8764	-0.2785
Dominance	$\bar{X}$ = 15.6866 S.D.= 5.4258	15.7071 5.4924	15.6286 5.2322	0.0731
Abasement	$\bar{X}$ = 11.6940 S.D.= 4.9734	11.5859 5.0071	12.0000 4.8639	-0.4210
Nurturance	$\bar{X}$ = 13.3433 S.D.= 5.0521	13.3131 4.7538	13.4286 5.8127	-0.1155
Change	$\bar{X}$ = 17.2463 S.D.= 4.4595	17.2424 4.5817	17.2571 4.0942	-0.0166
Endurance	$\bar{X}$ = 16.1045 S.D.= 5.1677	15.8687 5.1122	16.7714 5.2649	-0.8854
Heterosexuality	$\bar{X}$ = 13.8507 S.D.= 5.4341	14.1717 5.4865	12.9429 5.1766	1.1485
Aggression	$\bar{X}$ = 12.8731 S.D.= 4.5780	12.7980 4.2616	13.0857 4.9649	-0.3263
Consistency	$\bar{X}$ = 12.0370 S.D.= 1.7805	12.1010 1.7378	11.8571 1.8844	0.6936

T Tests on New Tests Between
Total, Successful and No Shows

	Total Group N = 143	Successful N = 99	No Shows N = 35	Successful vs. No Shows
		Study of Values		
Theoretical	$\bar{X}$ = 42.3246	42.1818	42.7286	-0.3559
	S.D.= 7.7670	7.3853	8.7443	
Economy	$\bar{X}$ = 40.4104	40.0606	41.4000	-0.7912
	S.D.= 8.5745	8.9438	7.3415	
Aesthetic	$\bar{X}$ = 43.6343	43.0606	45.2571	-1.3195
	S.D.= 8.4677	8.4274	8.3703	
Social	$\bar{X}$ = 39.4216	39.8081	38.3286	1.0294
	S.D.= 7.2924	6.7565	8.5356	
Political	$\bar{X}$ = 41.8246	42.1970	40.7714	1.1172
	S.D.= 6.4788	6.4302	6.4998	
Religious	$\bar{X}$ = 33.1306	32.9949	33.5143	-0.2347
	S.D.= 11.1820	11.3096	10.8038	
		Brown-Holtzman Study		
	$\bar{X}$ = 39.2090	41.2323	33.4857	3.7385*
	S.D.= 11.0109	10.3512	10.8057	
		McClelland Need Achievement Scale		
	$\bar{X}$ = 13.6716	13.8990	13.0286	0.9063
	S.D.= 4.8681	4.3958	5.9593	

* Significant at the > .01 level.