DIFFERENTIAL CHARACTERISTICS OF HIGHER AND LOWER ACHIEVING JUNIOR DIVISION SPRING SEMESTER STUDENTS AT MEMORIAL UNIVERSITY

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MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DIFFERENTIAL CHARACTERISTICS OF HIGHER AND LOWER ACHIEVING JUNIOR DIVISION SPRING SEMESTER STUDENTS AT MEMORIAL UNIVERSITY

by

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ABSTRACT

The purpose of this study was to compare the differential characteristics of higher and lower achieving Junior Division Spring Semester students at Memorial University. Specifically, intelligence differences, personality differences, reading differences and study habits differences were studied. From a questionnaire the variables of age, availability of books at home, presence of a library in the school, parents' occupations, number of children in family, birth order, type of high school attended, religion and parents' educational level were studied. Socio-economic level was also obtained in a different manner.

Forty-eight Spring Semester students from the total population of higher and lower achievers comprised the two major groups. They were matched on the variables of high school marks (Grade XI average), faculty, and rural-urban factor. The intelligence differences were determined by the Otis Quick Scoring Test of Mental Ability. Personality differences were determined by the Edwards Personal Preference Schedule. Reading differences were determined by the Nelson-Denny Reading Test, and study habits differences were determined by the Survey of Study

Habits and Attitudes. A questionnaire helped to determine differences between the other variables. Socio-economic level was obtained from the Department of Labour. By applying a two-way analysis of variance, it was possible to detect significant differences between intelligence, personality, reading ability, and study habits and attitudes. The variables listed on the questionnaire plus the socio-economic factor were then analyzed.

It was found that hypothesis number one which postulated a significant difference between intelligence levels of higher and lower achievers at the college level was accepted. Further analysis revealed partial acceptance of hypothesis number two which postulated significant differences on the personality traits of need for achievement, order and endurance.

Analysis of data showed acceptance of hypothesis number three which postulated a significant difference between the higher and lower achievers on study habits.

Hypothesis number four which postulated a significant difference between the higher and lower achievers on speed reading was rejected.

None of the groups differed significantly on the variables of age, availability of books at home, presence of a library in the school, parental level of education, number in family, birth order, type of high school attended,

religion, parents' occupations, and socio-economic level.

The higher achievers at the college level scored significantly higher than the lower achievers on the following: intelligence, need for order, intraception, dominance, change, vocabulary, total, delay avoidance, work methods, study habits, teacher acceptance, educational acceptance, study attitudes, and study orientation.

The higher and lower achievers at college did not differ significantly on the following: the need to achieve, deference, exhibition, autonomy, affiliation, succorance, abasement, nurturance, endurance, heterosexuality, aggression, comprehension, and speed reading.

The higher and lower achievers at the high school level did not differ significantly on the following: intelligence, the need to achieve, order, exhibition, autonomy, affiliation, intraception, succorance, dominance, abasement, change, endurance, heterosexuality, aggression, vocabulary, comprehension, total, speed reading, delay avoidance, study habits, teacher acceptance, study attitudes, and study orientation.

The higher and lower achievers at the college or high school level did not differ significantly on any of the variables of: age, availability of books at home, presence of a library in the school, fathers' and mothers' level of education, number in family, birth order, type of

high school attended, religion, fathers' and mothers' occupation level, and socio-economic level.

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CHAPTER I

NATURE OF THE STUDY

I. Introduction

When a student enters Memorial University, he may on the basis of his performance after a period of time, fall into one of these three categories:

1. Higher Achiever
2. Lower Achiever
3. Average Achiever

The factors determining which category a student may find himself in are many and varied. Variation in student achievement results from two main reasons: First, not all students take the same courses. They major in different curricular areas, and some types of majors may be more difficult than others.

Second, teachers use different criteria in assigning grades. Consider what is involved here: (a) There are the examinations themselves which may be objective, essay, or a combination of the two. (b) Oral participation is always important but some instructors may not assign a value to it. (c) Term papers when assigned receive different weights from different

instructors toward the final grade. Students differ in their ability to perform well in different areas; some may express themselves better in writing than orally, and some perform better on essay than on objective examinations. In fact then, many variables determine the grade a student receives. Additional variables such as personality characteristics, study habits and reading skills, and others are influential factors in academic performance.

II. The Present Problem

The question that Colleges and Universities are interested in solving is what differences really exist between students achieving at their level of expectancy, who are called higher-achieving students and those achieving below their level of expectancy, who are often called lower-achieving students.

Several other questions are also being asked. Why do some students achieve at the university and others do not? What are the factors which correlate most highly with academic success? Would some students do better in another type of university programme?

College counselors, educators, psychologists, and, in recent years, those not directly concerned with the problem of academic achievement, have expressed strong concern about those individuals who are not achieving at

the level that can be expected of them.[1]

Initial research with tests of scholastic aptitude and intelligence as predictors of academic achievement has made it clearly evident that tests of intelligence are quite useful for this purpose, but predictions based upon measures of scholastic aptitude are not.[2]

Many attempts have been made to isolate some of the intellectual factors that could possibly explain why some students make the most of their potential and others seemingly do not (Shaw and Brown, 1958; Holland, 1959; Jensen, 1958; Gough, 1956; Broedel, Ohlsen and Proff, 1958; Shaw and Grubb, 1958.)[3]

Krug, 1958 and Brown and Holtzman, 1954 have indicated that this phenomenon may be due to several nonintellectual factors.

The logical way to better understand this problem and make more accurate predictions with regard to a student's chance of success in academic endeavors would be to consider certain personality traits and study skills as well as the

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[1]David E. Lavin, The Prediction of Academic Performance, (New York: Russell Sage Foundation, 1965), p. 11.

[2]Ibid., p. 31.

[3]Ibid., pp. 101-103.

usual high school average, intelligence, and other factors that are utilized in making such predictions.[4]

Answers to these problems may provide the University with information which could help in identifying students who might eventually need help, the particular kind of help, and, in addition, may also indicate a greater need for the increased use of guidance for potential university students. Guidance programmes at the high school and University could be used to help students become aware of problems at the University level.

Perhaps through identification, guidance, and special programmes for students with special problems, the academic success of low achieving students can be increased.

III. Initial Research

Universities are currently looking for solutions to the problem of lower-achievement among their students. Clearly, personnel such as high school and college counselors, deans and teachers must, to varying degrees, either make decisions or help others make decisions that will significantly affect the course of students' lives. However, the state of knowledge in this field is not yet at a sufficiently definite level to be used confidently

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[4]Ibid., pp. 103-105.

for such practical decision-making.[5] This statement applies particularly to the research on personality and socio-environmental factors. In these areas too little is presently known to allow practical application.[6]

Of course, ability measures, such as tests of intelligence, grade eleven average and scholastic aptitude tests, do play a large role in current educational decision-making. However, information based on ability measures is certainly not sufficient in itself. If it were, there would be no need for additional research dealing with nonintellectual factors.

IV. Need for Further Research

Research on the prediction of academic performance needs to be expanded, not just in terms of developing better predictive models, but also in terms of discovering more meaningful sets of criteria related to "significant" aspects of life after completion of school. Certain types of students may not for various reasons, compile outstanding academic records, but they might nevertheless be suited for outstanding contributions later on. What they gain from education is not necessarily measured by their

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[5]Ibid., p. 66.

[6]Ibid., p. 167.

school grades.[7]

A greatly broadened context of research in the area of academic achievement is needed. Predictive models can be useful not only for the traditional tasks such as admissions, but also as a basis for aiding in the attainment of educational goals.

V. Purpose of the Study

The purpose of this study is threefold, namely:

1. To compare (a) the personality characteristics (as measured by the Edwards Personal Preference Schedule) and (b) the study habits skills (as measured by the Brown-Holtzman Survey of Study Habits and Attitudes (c) intelligence differences (as measured by the OTIS Test of Intelligence) and (d) reading differences (as measured by the Nelson-Denny Reading Test) of two groups of Junior Division Students: (i) one of higher achievement and (ii) one of lower achievement.
2. To identify other characteristics of Junior Division students such as (a) number of children in family; (b) birth order; (c) religion; (d) parents' occupation; (e) parents' educational level; (f) socio-economic level; (g) availability of library resource

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[7]Ibid., p. 168.

materials at home and at school and (h) the type of high school attended in order to (i) identify students who might experience difficulty during the programme, and (ii) improve the academic success of these students.

3. To stimulate further research in this area, on the basis of which special programmes for special students may be established.

VI. Definition of Terms

For purposes of this study, the following definitions were adopted.

Grade Eleven Average --- The grade eleven average in seven subjects (Mathematics A and B; History; English Language; English Literature; Science; plus one other course) obtained in high school.

Higher Achiever --- A student who has obtained an average of 65% or higher during the first two semesters at Memorial University in the Junior Division programme.

Lower Achiever --- A student who has obtained an average of 54% or less during the first two semesters in the Junior Division programme.

Intelligence Scores --- The intelligence scores as measured by the OTIS Group Test of Intelligence. The areas measured are:

1) Following directions
2) Opposites
3) Disarranged sentences
4) Proverbs
5) Arithmetic
6) Geometric figures
7) Analogies
8) Similarities
9) Narrative completion
10) Memory

Personality --- The personality test used was the Edwards Personal Preference Schedule (EPPS) which measures fifteen independent normal personality traits of:

1) achievement
2) deference
3) order
4) exhibition
5) autonomy
6) affiliation
7) intraception
8) succorance
9) dominance
10) abasement
11) nurturance
12) change
13) endurance
14) heterosexuality
15) aggression

Socio-economic Level --- Parents' income level per year as assessed according to government standards as set out by the Department of Labour.

Study Habits --- Those habits measured by the Brown-Holtzman Survey of Study Habits and Attitudes.

1) delay avoidance
2) work methods
3) study habits
4) teacher approval
5) education acceptance
6) study attitudes
7) study orientation

Speed Reading, Comprehension, Vocabulary --- As measured by the Nelson-Denny Reading Test.

Questionnaire --- This was given to secure data on:

1. the number of children in family
2. birth order
3. religion
4. parents' occupation
5. parents' educational level
6. socio-economic level
7. availability of library resource materials at home and school
8. type of high school attended

VII. Hypotheses

It is hypothesized that:

1. The mean score on the OTIS Test of Intelligence will be significantly higher for higher achievers than the mean for the lower achievers on the same scale.
2. The mean scores on achievement, order and endurance, on the Edwards Personal Preference Scale, will be significantly higher for the higher achievers than the mean scores for the lower achievers on the same scale.
3. The mean score of study habits on the Brown-Holtzman Survey of Study Habits and Attitudes will be significantly higher for the higher achievers than the

mean score for the lower achievers on the same scale.

4. The mean score of speed reading on the Nelson-Denny Reading Test will be significantly higher for the higher achievers than the mean score for the lower achievers on the same scale.

CHAPTER II

REVIEW OF LITERATURE

This particular chapter will give the reader a selected review of the literature that is relevant to the topic of this study. The chapter is divided into ten sections which are as follows:

I. Personality
II. Study Habits
III. High School Average
IV. Intelligence
V. Family Size
VI. Religion
VII. Occupation, Educational Level, and Socio-economic Level of the Parents
VIII. Birth Order
IX. Speed Reading, Comprehension, and Vocabulary
X. Study Environment

The major aim of the studies in this area was to discover those factors that would enable us to increase academic performance. The search for such factors focused primarily upon various characteristics of the student, such as his personality traits, aptitude and other factors

which may have influenced his academic performance.

I. Personality

Gebbart and Hoyt in their study of overachievers and underachievers found that overachievers scored significantly higher on scales of the Edwards Personal Preference Schedule on achievement, order, intraception, and consistency. The underachievers scored significantly higher than the lower achievers on scales on nurturance, affiliation, and change. The mean differences between the two groups on nurturance and change were especially significant.[1]

Krug did three different studies of higher and lower achievers using the Edwards Personal Preference Schedule, and reported the following conclusions: The studies showed that higher achievers were higher than the lower achievers on the need for achievement, order, and endurance. The higher achievers scored lower than the lower achievers on the needs for affiliation and heterosexuality.

All three studies showed that:

1. higher achievers are lower on the need for affiliation and
2. lower achievers are lower on the need for achievement,

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[1]Gary Gebbart and D.P. Hoyt, Personality Needs of Underachieving and Overachieving Freshmen, Journal of Applied Psychology, 42, 1958, pp. 122-128.

order and endurance.[2]

The studies show that personality factors do differentiate between higher and lower achievers at the college level.

II. Study Habits

Brown and Holtzman studied a college population and showed that study attitudes items did differentiate over and underachievers efficiently.[3]

Chahbazi in his study also indicates that study habits items differentiated both over and underachievers.[4]

Sullivan found in a study of Memorial University students that "good" students scored at the 70th percentile on study habits, and the "poor" students scored between the 20th and 30th percentiles.[5]

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[2]Robert E. Krug, Over and Underachievement and the EPPS, Journal of Applied Psychology, 43, 1959, pp. 133-136.

[3]William F. Brown and W.H. Holtzman, The Survey of Study Habits and Attitudes: A New Instrument for the Prediction of Academic Success, Educational and Psychological Measurement, 14, 1954, pp. 726-732.

[4]Parriz Chahbazi, Analysis of Cornell Orientation Inventory Items on Study Habits and Their Relative Value in Prediction of College Achievement, Journal of Experimental Education, 27, 1958, pp. 135-142.

[5]Arthur M. Sullivan, A Report of the President of an Investigation of the Performance of Memorial University Students on the Christmas Examinations, December 1966, (St. John's: Department of Psychology, 1966).

Study habits then clearly seemed to differentiate between higher and lower achievers at college level.

III. High School Average

Conklin and Ogston studied the prediction of academic success for freshmen students, by administering a selection of achievement, intelligence and personality tests to college freshmen for the purpose of identifying variables related to first year success. Correlation and regression analysis showed the results of high school average to be the best predictor, while the other variables were shown to possess little predictive value.[6]

Barnette has also reported that students who entered college with advanced standing based on performance and achievement tests, have generally had better records in college than students admitted under regular procedures.[7]

Panos and Alexander examined the ability to complete four years of college in a longitudinal study. It was found that subjects who did not complete four years

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[6]R.C. Conklin and D.G. Ogston, Prediction of Academic Success for Freshmen at the University of Calgary, Alberta Journal of Educational Research, 14, 1968, pp. 185-192.

[7]Leslie W. Barnette, Advanced Credit for the Superior High School Student, Journal of Higher Education, 28, 1957, pp. 15-20.

of college had lower grades in high school.[8]

Black, in his study, examined grade point average among college freshmen, and found that it was a valid predictor of academic success at the college level.[9]

Cross and Allen, in their study, showed that the relationship between achievement and grade point average is strong.[10]

Sullivan also showed that high school marks are a valid predictor of academic success at the college level.[11]

IV. Intelligence

Sewell and Shah in a study on intelligence showed that intelligence was the most important variable in determining the rate of graduation from colleges and had the most direct effect on college plans.[12]

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[8]Robert J. Panos and Austin W. Alexander, Attrition Among College Students, American Educational Research Journal, 5, 1968, pp. 57-72.

[9]D.B. Black, Application of Alberta Admissions Research Findings in a Quasi Operational Setting, Alberta Journal of Educational Research, 15, 1969, pp. 131-150.

[10]Herbert Cross and J. Allen, Ego Identity Status, Adjustment and Academic Achievement, Journal of Counseling and Clinical Psychology, 34, 1970, pp. 288.

[11]Arthur M. Sullivan, A Report to the President of an Investigation of the Performance of Memorial University Students on the Christmas Examinations, December 1966, (St. John's: Department of Psychology, 1966).

[12]William H. Sewell and Vimal P. Shah, Social Class, Parental Encouragement and Educational Aspirations, American Journal of Sociology, 73, 1968, pp. 559-572.

Conklin and Ogston, in another study, showed that intelligence did possess predictive utility, but relatively little in comparison to high school average.[13]

Lavin concluded that:

> It is true that on those educational levels for which data are most reliable (high school and college) measures of ability on the average account for thirty-five to forty-five percent of the variation, more than half still remains unexplained. Thus, attention turns to other factors of a non-intellective nature which may be pertinent.[14]

V. Family Size

Bernstein stated that family size is inversely related to academic performance; that is, the larger the number of siblings, the lower the level of school achievement.[15]

Nisbet also studied family size and has pointed out that family size is inversely related to intelligence and also is inversely related to socio-economic status.[16]

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[13]Conklin and Ogston, loc. cit.

[14]David E. Lavin, The Prediction of Academic Performance, (New York: Russell Sage Foundation, 1965), p. 59.

[15]B. Bernstein, Some Sociological Determinants of Perception: An Inquiry into Sub-cultural Differences, British Journal of Sociology, 7, 1968, pp. 159-174.

[16]The prediction of Academic Performance, p. 146, cited by David E. Lavin, Family Environment and Intelligence, J. Nisbet.

Hunt also suggested that family size is independently of socio-economic status, related to both intelligence and academic performance.[17]

VI. Religion

Bronson and Meadow studied the need achievement orientation of Catholic and Protestant Mexican-Americans. These were subjects from similar levels of acculturation, and socio-economic background. One instrument evaluating basic achievement motivation, reflected an equal drive in both groups. A second instrument reflecting values and attitudes showed the Protestants to have achievement goals more related to an activist-individualistic future orientation. The authors suggested that certain elements of the Protestant Religion, such as stewardship, individual responsibility, asceticism, and self-discipline are responsible for the attitude differences expressed by Protestant subjects.[18]

Gerritz in another study found that Jews were more likely to be high achievers than students of other

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[17] Joseph McVicker Hunt, Intelligence and Experience, (New York: The Ronald Press, 1961), p. 40.

[18] L. Bronson and A. Meadow, The Need Achievement Orientation of Catholic and Protestant Mexican-Americans, Revista Interamericana de Psicologia, 2, 1968, pp. 159-168.

religions.[19]

Because some evidence suggests the presence of differences in the value systems of different religious groups, further study is warranted. The work to date indicates, for example, that relative to the Catholic value system, the Jewish culture places greater emphasis on the value of education and confers more prestige upon the scholar. Presumably this emphasis upon scholarship fits into a value system which places great importance upon rationality, future time orientation, and the like. Whether such achievement-related values are unique to particular religious groups or are associated more generally with differences in socio-economic status should be ascertained through further research.[20]

VII. Occupation, Educational Level, and Socio-economic Level of the Parents

Lavin reported from thirteen studies that socio-economic status is directly related to academic performance.[21]

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[19]Harold G.J. Gerritz, The Relationship of Certain Personal and Socio-economic Data to the Success of Resident Freshmen Enrolled in the College of Science, Literature and Arts at the University of Minnesota, Dissertation Abstracts, 16, 1956, pp. 23-66.

[20]David E. Lavin, The Prediction of Academic Performance, (New York: Russell Sage Foundation, 1965), p. 131.

[21]Ibid., p. 150.

Sewell and Shah showed that socio-economic status does effect college plans, attendance and levels of attainment. They also found that for women the effect of socio-economic status was relatively greater than that of intelligence, whereas for men this was reversed.[22]

Werts in his study dealt with fathers' occupations, level of fathers' education and academic achievement. Among low achievers, boys were much more likely than girls to enter college, while among high achievers, boys and girls were equally alike. From subjects with low socio-economic status, boys were much more likely than girls to go to college and boys and girls whose fathers were closely associated with academia had similar college attendance rates.[23]

Panos and Alexander examined the ability of subjects to complete four years of college within four years after matriculation. It was found that subjects who did not complete four years of college came from lower socio-economic backgrounds, had lower grades in school and had a lower level of initial educational aspiration.[24]

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[22]Sewell and Shah, op. cit., p. 560.

[23]Charles E. Werts, A Comparison of Male vs. Female College Attendance Probabilities, Sociology of Education, 41, 1968, pp. 103-110.

[24]Panos and Alexander, loc. cit.

Knoell and Medsker studied the factors affecting performance of transfer students from two to four year colleges, and concluded that there was remarkably close agreement among studies about the level of education attained by the parents of junior college subjects. They found that more than one half of the fathers had had at least a high school education and nearly thirty percent of the fathers had attended college for some period.[25]

However, Tilley noted that the very brightest high school graduates with fathers in the highest occupational categories, were not found in large numbers in Californian junior colleges.[26]

VIII. Birth Order

Green and Clark studied the live birth order of college freshmen, while the variables of family size and social class were statistically controlled. Comparisons of the subjects observed birth orders with the expected birth orders from census data, observed family size and family size within each social class showed a significant over-representation of first borns among college students in an Anglo-American group and similar tendencies, although some were not statistically significant in a Spanish-

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[25]Dorothy M. Knoell and Leland L. Medsker, Factors Affecting Performance of Transfer Students From Two to Four Year Colleges with Implications for Co-ordination Articulation, Dissertation Abstracts, 1964, p. 254.

[26]Ibid., p. 193.

American group.[27]

Bradley found overwhelming evidence which showed that first borns of both sexes attend college in greater numbers than later-borns peers. Tenuous explanations exist, indicating that early personality factors favouring first borns are substantiated and extended while in school. First borns more frequently meet teachers' expectations, show more susceptibility to social pressure and exhibit greater information seeking behavior and seem more sensitive to tension producing situations.

The behaviors may strengthen achievement motivation and enhance academic performance.[28]

Eisenman and Platt also studied birth order and sex differences in academic achievement. In this study, birth order and sex of one hundred and thirty-one subjects in relation to their grades, were investigated. Females made better grades than males regardless of birth order, with the results being more marked among first born males and females.[29]

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[27]Roger L. Green and J.R. Clark, Birth Order and College Attendance in a Cross-cultural Setting, Journal of Social Psychology, 75, 1968, pp. 289-290.

[28]Richard W. Bradley, Birth Order and School-related Behavior: A Heuristic Review, Psychological Bulletin, 70, 1968, pp. 45-51.

[29]Russell Eisenman and Jerome L. Platt, Birth Order and Sex Differences in Academic Achievement and Internal-External Control, Journal of General Psychology, 78, 1968, pp. 279-285.

These results lend further support to the validity of birth order research which has revealed an over-representation of first borns in the college population.

IX. Speed Reading, Comprehension, and Vocabulary

Vineyard and Massey studied the interrelationship of certain linguistic skills and their relationship with scholastic achievement when intelligence was ruled constant. Their conclusions showed there was a definite positive relationship for both spelling, vocabulary, and speed reading with scholastic success.[30]

X. Study Environment

Appleton investigated the effects of study environment and found that subjects' interest, study environment and student motivation were found to be major factors influencing concentration efficiency.[31]

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[30]Edwin E. Vineyard and Harold W. Massey, The Interrelationship of Certain Linguistic Skills and Their Relationship with Scholastic Achievement when Intelligence is Ruled Constant, Journal of Educational Psychology, 48, 1957, pp. 279-286.

[31]William S. Appleton, The Struggle to Concentrate, American Journal of Psychiatry, 126, 1969, pp. 256-259.

CHAPTER III

METHODOLOGY

This study attempts to show whether or not the higher achiever is different from the lower achiever. The higher and lower achievers were compared on ten basic factors.

This chapter is divided into seven sections:

I. Design of the Study

II. Description of the Sample and Sampling Procedure

III. Method of Data Collection

IV. Description of Instruments Used

V. Scoring and Analysis of Data

VI. Limitations of the Study

I. The Design of the Study

The design of the study was as follows:

1. One hundred and thirty-two higher achievers and two hundred and twelve lower achievers as defined by their results on the Fall and Winter Semesters were selected by computer from Memorial University population.

2. The grade eleven average for each student was obtained from the office of the Registrar. Two groups of lower achievers were selected from the population of lower achievers. The first group had a grade eleven average ranging from sixty-five to sixty-nine and the second group had a grade eleven average ranging from seventy to seventy-five. Then two groups of higher achievers were selected from the population of higher achievers. The first group had a grade eleven average ranging from sixty-five to sixty-nine and the second group had a grade eleven average ranging from seventy to seventy-five.
3. Each student was administered the Edwards Personal Preference Schedule to determine various specific personality characteristics.
4. Each student was administered the Brown-Holtzman Survey of Study Habits and Attitudes to determine his level of studying ability and his attitudes towards studying.
5. Each student was administered the Nelson-Denny Reading Test, to determine his level of vocabulary, comprehension and speed reading.
6. Each student was administered the OTIS Test of Intelligence to determine his level of intelligence.

7. Each student answered a questionnaire concerning:
   (a) number of children in family
   (b) birth order
   (c) religion
   (d) parents' occupation
   (e) parents' educational level
   (f) socio-economic level of parents
   (g) availability of books at home and library resource materials at school
   (h) type of high school
8. Information and scores for each student were coded and the groups compared.
9. The information and data were collected during the Spring Semester, so that each student had completed the Fall and Winter semesters at Memorial University (1970-1971). No student was accepted unless he had met this criteria.

II. Description of Sample and Sampling Procedure

All four groups were then matched on:

(a) faculty
(b) rural-urban factor (St. John's, Gander, Grand Falls, Corner Brook and Labrador City were the urban areas; all others were considered rural.)
(c) Grade XI marks

Twelve higher achievers with a grade eleven average ranging from sixty-five to sixty-nine, and twelve with a range from seventy to seventy-five were eventually selected. Then twelve lower achievers with a grade eleven average ranging from sixty-five to sixty-nine, and twelve with a range from seventy to seventy-five were selected. Four matched groups comprised the total possible final samples.

After the initial selection of the sample, each student was sent a letter explaining the nature of the study, and asking for his co-operation and participation in the study (see Appendix A). Each student was then contacted by telephone and a testing schedule convenient for him or her was set up. The attendance was excellent. All students were allowed interpretation of test results at a later date.

III. Method of Data Collection

Each student could come at any time that was convenient for him. Testing continued from 9.00 a.m. to 11.00 p.m.

Students were given five separate instruments.

1. the Edwards Personal Preference Schedule
2. the Brown-Holtzman Survey of Study Habits and Attitudes
3. the Nelson-Denny Reading Test

4. the OTIS Test of Intelligence
5. the Questionnaire (see Appendix F)

All psychological tests contained instructions for self-administration and all subjects followed these directions to insure standardization of administration. The questionnaire was also self-administered. Any subject who had a question could ask the examiner privately, so that no ambiguity remained. There were time limits on:

(a) the OTIS Test of Intelligence
(b) the Nelson-Denny Reading Test.

There were no time limits on

(a) the Edwards Personal Preference Schedule
(b) the Brown-Holtzman Survey of Study Habits and Attitudes
(c) the Questionnaire.

All subjects were finished within three hours.

IV. Description of Instruments Used

1. The Edwards Personal Preference Schedule

In order to measure the personality traits of the subjects, it was necessary to find a test that would give discrete scores for the personality traits studied by the investigator. The Edwards Personal Preference Schedule gives fifteen personality traits, which are appropriate for the study.

Striker, Research Psychologist of the Educational Testing Service, Princeton University, stated that in the case of the Edwards Personal Preference Schedule:

> Since it appeared a decade ago, the Edwards Personal Preference Schedule has been very widely used and has generated a tremendous amount of research. This popularity stems from the theoretical relevance and potential usefulness of the personality variables that it is intended to measure - fifteen of Murray's needs and its attempt to minimize the effects of Edwards' well known finding that the rated social desirability of a set of personality items correlated. Eighty-seven with their frequency of endorsement.[1]

Barron, Research Psychologist, at the University of California, stated:

> Summing up, the Edwards Personal Preference Schedule is an instrument which has several unique and useful characteristics and which promises to be very helpful in general personality-oriented research.[2]

Fiske, Associated Professor of Psychology, University of Chicago also stated:

> In general, the inventory itself represents a distinct step forward in techniques for the measure of personality. It is theoretically oriented and technically sound.[3]

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[1]Oscar Krisen Buros, The Sixth Mental Measurement Yearbook, (New Jersey: The Gryphon Press, 1965), p. 87.

[2]Oscar Krisen Buros, The Fifth Mental Measurement Yearbook, (New Jersey: The Gryphon Press, 1959), p. 47.

[3]Buros, loc. cit.

The Edwards Personal Preference Schedule provides measures of fifteen variables. The names of the variables are as follows:

1.	Achievement	(ach)
2.	Deference	(def)
3.	Order	(ord)
4.	Exhibition	(exh)
5.	Autonomy	(aut)
6.	Affiliation	(aff)
7.	Intraception	(int)
8.	Succorance	(suc)
9.	Dominance	(dom)
10.	Abasement	(aba)
11.	Nurturance	(nur)
12.	Change	(chg)
13.	Endurance	(end)
14.	Heterosexuality	(het)
15.	Aggression	(agg)[4]

The main advantages of the Edwards Personal Preference Schedule are that it can be easily understood by the subjects, it can be self-administered, it has no time limit, and its scoring is a simple clerical task.

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[4]Allen L. Edwards, Edwards Personal Preference Schedule, (New York: The Psychological Corporation, 1959), p. 5.

2. The Brown-Holtzman Survey of Study Habits and Attitudes

It was decided to use this survey because it offers a single "study habits and attitudes" quotient suitable for analysis, and for its technical basis which incorporates attitudinal and motivational differences among students.

James Delse, Associated Professor of Psychology, Johns Hopkins University wrote in the case of the Survey of Study Habits and Attitudes:

> This inventory or survey is a unique and valuable contribution to the techniques for assisting student habits of work and motivation for study. It is more suited for uncovering attitudinal and motivational differences than any other published study inventory and its use is particularly recommended where such difficulties are the prime concern. In addition, its value for research on counseling and remedial teaching must not be overlooked.[5]

Wrenn and Lewis stated:

> This instrument is well grounded, easy to understand, and can be an excellent source of study habit and attitude formation for use by student and counselor.[6]

3. The Nelson-Denny Reading Test

This test was administered to measure:

(a) vocabulary level

(b) comprehension level

(c) speed reading.

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[5]Buros, op. cit., p. 782.

[6]Ibid., p. 688.

Crites wrote in the case of the Nelson-Denny:

> Reliabilities for the test ... based upon a carefully conducted study of 110 college students, seem to be adequate for both general screening purposes with the total scale and diagnostic work with the sub-scales. With respect to the latter, the validity data on the test, which consists primarily of item analyses indicates that it can be used to identify differential difficulties in vocabulary and comprehension.[7]

Orr stated:

> Reliabilities for reading rate, vocabulary, and total scores are exceptionally high (.92 to .93). Although comprehension is a little lower. However, standard errors of measurement are presented by form by grade and their use explained.[8]

Townsend, Consultant of the Educational Records Bureau, stated:

> It is a challenging test with a highly academic flavor. The percentile norms seem adequate for grade XI and above, and the test may facilitate a survey of a field where we admittedly lack good information - the growth of reading power in the college years.[9]

The test can be administered in a standardized manner, is less than one hour in duration, and easily hand scored.

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[7]Oscar Krisen Buros, The Sixth Mental Measurement Yearbook, (New York: The Gryphon Press, 1965), p. 801.

[8]Ibid., p. 800.

[9]Ibid., p. 801.

4. The OTIS Quick Scoring Test of Intelligence

This test was used because it was easy to administer, score and interpret, but particularly because it measured ten different areas of abilities:

1. Following directions
2. Opposites
3. Disarranged sentences
4. Proverbs
5. Arithmetic
6. Geometric figures
7. Analogies
8. Similarities
9. Narrative completion
10. Memory.

The test took only one hour to complete.

Lefever, Professor of Education, University of Southern California, stated in the case of the OTIS:

> It fundamentally is a short and easily scored indicator of scholastic aptitude. Such a measure, if interpreted with care, can be useful to both teacher and counselor by revealing within fairly broad limits of accuracy the probable level of academic achievement for a majority of pupils.[10]

Kuder, Professor of Education, Duke University also wrote concerning the OTIS:

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[10]Oscar Krisen Buros, The Fifth Mental Measurement Yearbook, (New Jersey: The Gryphon Press, 1959), p. 362.

> For purposes of prediction of school and college success, these tests compare favorably with other measures of general ability.[11]

5. The Questionnaire

The questionnaire was developed by the investigator and was given to secure data on:

1. number of children in family
2. birth order
3. religion
4. parents' occupation
5. parents' educational level
6. parents' socio-economic level
7. availability of books at home and library resource materials in the school
8. type of high school attended.

V. Scoring and Analysis of Data

Scoring

The scoring for the Edwards Personal Preference Schedule; Brown-Holtzman Survey of Study Habits and Attitudes; Nelson-Denny Reading Test; and the OTIS Quick Scoring Test of Intelligence was simply a clerical task carried out by the investigator and an assistant. The

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[11] Oscar Krisen Buros, The Third Mental Measurement Yearbook, (New Jersey: The Gryphon Press, 1949), p. 251.

results were then put on cards for easy access.

Analysis of Data

Hypotheses 1 - 4 were tested using a two-way analysis of variance.

VI. Limitations of the Study

1. This study is limited to the two groups under investigation.
2. The Introductory Psychology students who participated in the study may be different from other Junior Division students.
3. This study does not take into account students who have dropped out, or why they did so. Investigations will be limited to those remaining in each group.
4. Measurement by each instrument used was indirect.
5. Those Junior Division students, who were present during the Spring Semester, may not have been typical of all freshmen at Memorial University.

CHAPTER IV

ANALYSIS OF DATA

Hypotheses 1 - 4 required an analysis of the difference in the mean scores of the higher and lower achievers. It was decided that the two-way analysis of variance would be used to determine whether or not the difference was significant. The significance level for each analysis of variance was set at the .05 level.

I. OTIS Test of Intelligence

Table I shows the results of the higher achievers and the lower achievers on the OTIS Test of Intelligence. Both groups were matched on grade eleven marks, faculty and rural-urban factor. This was the first test written by the subjects. The areas measured by the scale were: (1) Following directions; (2) Opposites; (3) Disarranged sentences; (4) Proverbs; (5) Arithmetic; (6) Geometric figures; (7) Analogies; (8) Similarities; (9) Narrative completion; and (10) Memory. The results were analysed by using a two-way analysis of variance.[1]

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[1] B.J. Winer, Statistical Principles in Experimental Design, (New York: McGraw-Hill Book Company, 1962), p. 160.

TABLE I

MEAN SCORES FOR THE OTIS QUICK SCORING TEST OF INTELLIGENCE ALONG WITH P-VALUES FOR GROUP COMPARISONS

High College		Low College		Significant Levels by Factors from Analysis of Variance	
				p-value	
High High School	Low High School	High High School	Low High School	High School	College
112	112	108	105	0.521	0.008*

* Indicates a significant difference of p = .05.

There was a significant difference found between the higher and lower achievers at the college level on the OTIS Test of Intelligence. There was no significant difference found between the higher and lower achievers at the high school level on the same measure.

From this analysis it can be concluded that:

(1) Hypothesis number one is accepted. The mean score on the OTIS Test of Intelligence was significantly higher for the higher achievers at college than the mean for the lower achievers on the same measure.

(2) The mean score on the OTIS Test of Intelligence was not significantly higher for the higher achievers at high school than the mean for the lower achievers on the same measure.

II. The Edwards Personal Preference Schedule

The Edwards Personal Preference Schedule gives a total of fifteen standard scales. Each scale covers an important aspect of personality. The scales are as follows:

1. Need for achievement (ach)
2. Deference (def)
3. Order (ord)
4. Exhibition (exh)
5. Autonomy (aut)

6. Affiliation (aff)
7. Intraception (int)
8. Succorance (suc)
9. Dominance (dom)
10. Abasement (aba)
11. Nurturance (nur)
12. Change (chg)
13. Endurance (end)
14. Heterosexuality (het)
15. Aggression (agg)

Analysis of the fifteen scores showed that on some traits there were no significant differences between the higher and lower achievers, but on others there were significant differences as shown in Table II. The basic purpose of each scale and the results of each are as follows:

Need to Achieve -- To do one's best, to be successful and to accomplish tasks requiring skill and effort.[2] There was no significant difference found between higher and lower achievers at the college level. There was no significant difference found between higher and lower achievers at the high school level.

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[2]Allen L. Edwards, Edwards Personal Preference Schedule, (New York: The Psychological Corporation, 1959), p. 11.

TABLE II

MEAN SCORES FOR FIFTEEN PERSONALITY TRAITS AS MEASURED BY THE EDWARDS PERSONAL PREFERENCE SCHEDULE ALONG WITH P-VALUE RESULTS OF GROUP COMPARISONS

Trait+	High College		Low College		Significant Levels by Factors from Analysis of Variance p-value	
	High High School	Low High School	High High School	Low High School	High School	College
ach	11	13	12	9	0.455	0.182
def	11	12	11	13	0.039*	0.967
ord	9	10	11	12	0.574	0.041*
exh	12	14	13	14	0.180	0.390
aut	13	14	16	13	0.436	0.244
aff	16	15	13	16	0.392	0.185
int	17	17	15	13	0.351	0.048*
suc	11	11	9	13	0.084	0.924
dom	10	12	11	10	0.751	0.045*
aba	17	15	14	15	0.794	0.214
nur	18	19	15	19	0.054*	0.310
chg	15	14	19	19	0.454	0.004*
end	15	12	12	12	0.373	0.512
het	21	20	21	17	0.113	0.388
agg	12	14	16	12	0.648	0.317

* Indicates a significant difference of p = .05.

+ Abbreviations represent the following traits;
ach - achievement; def - deference; ord - order; exh - exhibition; aut - autonomy; aff - affiliation; int - intraception; suc - succorance; dom - dominance; aba - abasement; nur - nurturance; chg - change; end - endurance; het - heterosexuality; agg - aggression.

Need for Deference -- To get suggestions from others, to follow instructions and do what is expected, to conform to custom and avoid the unconventional, and to let others make the decisions.[3] Higher achievers at high school scored significantly higher on this trait than lower achievers. There was no significant difference found between higher and lower achievers at the college level.

Need for Order -- To have written work neat and organized, to make plans before starting on a difficult task, to organize details of work and to have things arranged so that they run smoothly without change.[4] There was a significant difference found between the higher and lower achiever at the college level with the higher achievers doing significantly higher. There was no significant difference found between the higher and lower achiever at the high school level.

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[3]Ibid., p. 11.

[4]Ibid., p. 11.

Need for Exhibition -- To say witty and clever things, to tell amusing jokes and stories, to talk about personal adventures and experiences, to say things just to see what effect it will have on others, and to talk about personal achievements, and be the center of attention.[5] There was no significant difference found between the higher and lower achiever at the college level, or at the high school level.

Need for Autonomy -- To be able to come and go as desired, to say what one thinks about things, to be independent of others in making decisions, and to do things without regard to what others may think.[6] There was no significant difference between the higher and lower achievers at the college or the high school level.

Need for Affiliation - To be loyal to friends, to do things for friends, to form new friendships, make as

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[5]Ibid., p. 11.

[6]Ibid., p. 11.

many friends as possible, to do things with friends rather than alone and to form strong attachments.[7] There was no significant difference found between the higher and lower achievers at the college level or at the high school level.

Need for Intraception - To analyze one's motives and feelings, to judge people by why they do things rather than what they do, to analyze the behavior of others, their motives, and to predict how others will act.[8] There was a significant difference found between the higher and lower achievers at the college level with the higher achievers scoring significantly higher than the lower achievers. There was no significant difference found between the higher and lower achievers at the high school level.

Need for Succorance -- To have others provide help when in trouble, to seek encouragement from others, to have others be sympathetic and understanding about personal problems, and to be helped by others

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[7]Ibid., p. 11.

[8]Ibid., p. 11.

when depressed.[9] There was no significant difference found between the higher and lower achievers at the college or at the high school level.[10]

Need for Dominance -- To argue for one's point of view, to be a leader and to be regarded by others as a leader, to make group decisions, settle arguments and disputes, persuade and influence others and to supervise and direct the actions of others. No significant differences were found between the higher and lower achievers at college or at the high school level.

Need for Abasement -- To accept blame when things go wrong, to feel the need for punishment for doing wrong, to feel better when giving in and avoiding a fight than when having one's way, and to feel timid and inferior to others.[11] No significant differences were found between the higher and lower achievers at college or at the high school level.

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[9]Allen L. Edwards, Edwards Personal Preference Schedule, (New York: The Psychological Corporation, 1959), p. 11.

[10]Ibid., p. 11.

[11]Ibid., p. 11.

Need for Nurturance -- To help friends when they are in trouble, treat others with kindness and sympathy, to forgive and be generous with others, and to have others confide in one about personal problems.[12] No significant difference was found between higher and lower achievers at the college level. A significant difference was found between higher and lower achievers at the high school level with the higher achievers scoring significantly higher.

Need for Change -- To do new and different things, to experience novelty and change in daily routine and to experiment and try new things.[13] A significant difference was found between the higher and lower achievers at the college level. No significant difference was found between the higher and lower achievers at the high school level.

Need for Endurance -- To keep at a job until it is finished, keep at a problem until it is solved, stick at a problem even though it may seem as if no

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[12]Ibid., p. 11.

[13]Ibid., p. 11.

progress is being made and to avoid being interrupted while at work.[14] No significant difference was found between the higher and lower achievers at the college or high school level.

Need for Hetero-sexuality -- To go out with members of the opposite sex, engage in social activities with the opposite sex, be in love with someone of the opposite sex and to become sexually excited.[15] No significant difference was found between the higher and lower achievers at the college or high school level.

Need for Aggression -- To attack contrary points of view, tell others what one thinks about them, criticize others publicly, to get revenge for insults and to become angry or blame others when things go wrong.[16] No significant difference was found between higher and lower achievers at the college level or at the high school level.

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[14] Ibid., p. 11.

[15] Ibid., p. 11.

[16] Ibid., p. 11.

From the preceding it can be seen that:

Hypothesis number two postulating personality differences is partially accepted. It is accepted for the trait of order, but rejected for the traits of achievement and endurance.

Higher achievers at the high school level scored significantly higher than the lower achievers on the need for deference.

Higher achievers at the college level scored significantly higher than the lower achievers on the need for order.

Higher achievers at the college level scored significantly higher than the lower achievers on the need for intraception.

Higher achievers at the college level scored significantly higher than the lower achievers on the need for dominance.

Higher achievers at the high school level scored significantly higher than the lower achievers on the need for nurturance.

No significant difference was found between higher and lower achievers at the college level on the need for nurturance.

Higher achievers at the college level scored significantly higher than the lower achievers on the need for change.

Higher achievers at college level scored significantly higher on the needs for order, intraception, dominance, and change.

There were no significant differences found between higher and lower achievers at the college level on the needs for: achievement, deference, exhibition, endurance, heterosexuality, and aggression.

Higher achievers at the high school level scored significantly higher than the lower achievers on the needs for deference and nurturance.

There were no significant differences found between higher and lower achievers at the high school level on the needs for: exhibition, autonomy, affiliation, succorance, abasement, endurance, heterosexuality, aggression, achievement, order, intraception, change, and dominance.

III. Brown-Holtzman Survey of Study Habits and Attitudes

Table III shows the results of the four groups on the Survey of Study Habits and Attitudes.

Analysis of the seven scores showed that the higher and lower achievers at college differed significantly on all factors. The higher and lower achievers at the high school level differed significantly on three factors. The basic purpose of each scale and the results of each scale

TABLE III

MEAN SCORES ON THE BROWN-HOLTZMAN SURVEY OF STUDY HABITS AND ATTITUDES ALONG WITH ANALYSIS OF VARIANCE - RESULTS OF GROUP COMPARISONS

Trait+	High College		Low College		Significant Levels by Factors from Analysis of Variance	
					p-value	
	High High School	Low High School	High High School	Low High School	High School	College
DA	24	25	16	16	0.730	0.001*
WM	29	23	24	17	0.005*	0.016*
SH	54	48	40	34	0.136	0.001*
TA	28	25	19	19	0.443	0.002*
EA	29	24	19	17	0.032*	0.000*
SA	57	50	41	38	0.162*	0.000*
SO	106	103	79	66	0.332	0.000*

* Indicates a significant difference of p = .05.

+ Abbreviations represent the following traits:

DA - Delay Avoidance; WM - Work Methods; SH - Study Habits; TA - Teacher Acceptance; EA - Educational Acceptance; SA - Study Attitudes; SO - Study Orientation.

are as follows:

Delay Avoidance -- The degree to which a person delays and avoids study, or intends to start study at another time. The scores for the higher achievers at the college level were significantly higher than the lower achievers, on the same measure. No significant difference was found between the higher and lower achievers at high school.

Work Methods -- The degree to which a person is methodical in his approach to study, and the degree to which a person organizes his time and his assignments. The higher achievers at college scored significantly higher than the lower achievers on this factor. The same results held true for the higher and lower achievers at the high school level.

Study Habits -- The degree to which a person follows some regular pattern of study. The higher achievers at college scored significantly higher than the lower achievers on this factor. No significant difference was found between the higher and lower achievers at the high school level.

Teacher Acceptance -- The degree to which a person accepts teachers, the degree to which positive relationships can be established between the student and teacher, and the willingness of teacher acceptance. The higher achievers at the college level scored significantly higher than the lower achievers on this factor. No significant difference was found between the higher and lower achievers at the high school level.

Educational Acceptance - The degree to which a person has the tendency and the attitude to want to become an educated person. It also measures the positive attitudes towards the value of an education. The higher achievers at college scored significantly higher on this factor than did the lower achievers on the same factor. No significant differences were found between higher and lower achievers at the high school level.

Study Attitudes -- The degree to which one has positive or negative attitudes towards study and the value of study for the person. The higher achievers scored significantly higher than

the lower achievers at the college level. No significant difference was found between higher and lower achievers at the high school level.

Study Orientation - The degree to which a person has a positive orientation toward study, or the degree to which study environment has affected study orientation. The higher achievers at the college level scored significantly higher than the lower achievers on this factor. No significant difference was found between the higher and lower achievers at the high school level.

From the preceding results it can be seen that:

Hypothesis number three is accepted for the study habits trait.

The higher achievers at college scored significantly higher than the lower achievers on the traits of delay avoidance, work methods, teacher acceptance, educational acceptance, study attitudes and study orientation.

The higher achievers at high school scored significantly higher than the lower achievers at high school on the traits of work methods and educational acceptance.

There were no significant differences found between the higher achievers at the high school level on traits of delay avoidance, study habits, teacher acceptance, study attitudes and study orientation.

IV. The Nelson-Denny Reading Test

Table IV shows the results of the Nelson-Denny Reading Test. Analysis of the four scores showed that on one factor there was a significant difference, but on other factors there were no significant factors. The basic purpose of each scale and the results of each scale are as follows:

Vocabulary -- The degree to which a person achieves on a test of vocabulary. The higher achievers at the college level scored significantly higher than the lower achievers on the measure. No significant difference was found between the higher and lower achievers at the high school level on the same measure.

Comprehension - The degree to which a person can understand as compared to the amount read, or the level of understanding of that person. No significant differences were found between the higher and lower achievers at the college or at the high school level on this measure.

TABLE IV

MEAN SCORES ON THE NELSON-DENNY READING TEST ALONG WITH ANALYSIS OF VARIANCE RESULTS OF GROUP COMPARISONS

Factor	High College		Low College		Significant Levels by Factors from Analysis of Variance p-value	
	High High School	Low High School	High High School	Low High School	High School	College
Vocabulary	40	37	29	25	0.407	0.004*
Comprehension	19	18	17	18	0.980	0.323
Total	55	52	46	43	0.531	0.085
Speed Reading	27	27	28	28	0.912	0.451

* Indicates a significant difference of $p \leq .05$.

Total -- This provides a measure of vocabulary and comprehension combined. No significant differences were found between the higher and lower achievers at the college or at the high school level on this measure.

Speed Reading -- The rate per minute at which a person can read from a paragraph. No significant differences were found between the higher and lower achievers at the college or at the high school level on this measure.

From the above it can be seen that:

Hypothesis number four is rejected for the factor of speed reading.

The higher achievers at the college level scored significantly higher than the lower achievers on the vocabulary measure.

No significant differences were found between the higher and lower achievers at the college level on the measures of comprehension, total, and speed reading.

No significant differences were found between the higher and lower achievers at the high school level on the measures of vocabulary, comprehension, total, and speed reading.

V. The Questionnaire

Age Differences -- Table V shows the results of question two of the questionnaire (see Appendix VI) in which the students were asked to indicate their age. The purpose was to see if higher and lower achievers at college differed significantly on age. The age differences among the groups are as follows: No significant differences were found between the higher and lower achievers at the college or at the high school level.

Availability of Books at Home -- Table VI shows the results of question thirteen of the questionnaire in which the students were asked to indicate whether or not there were books in their home. The purpose was to see if the higher achievers and the lower achievers differed significantly on this factor. No significant differences were found between the higher and lower achievers at the college or at the high school level on that factor.

TABLE V

MEAN AGE SCORES FOR THE HIGHER AND LOWER ACHIEVERS AT COLLEGE AND HIGH SCHOOL

High College		Low College	
High High School	Low High School	High High School	Low High School
18	18	18	17

TABLE VI

THE NUMBER AND PERCENTAGES OF STUDENTS WITH AND WITHOUT BOOKS IN THE HOME

	College					High School			
			Percentages				Percentages	
	High Achievers	Low Achievers	High Achievers	Low Achievers		High Achievers	Low Achievers	High Achievers	Low Achievers
Yes	22	22	92	92	Yes	22	22	92	92
No	2	2	8	8	No	2	2	8	8

Availability of Books at School -- Table VII shows the results of question fourteen of the questionnaire in which the students were asked to indicate whether or not there was a library in the school they attended. The purpose of this question was to find if there was a significant difference between the higher and lower achievers on this factor. No significant difference was found between the higher and lower achievers at the college or at the high school level.

Fathers' Level of Education -- Table VIII shows the results of question five of the questionnaire in which the students were asked to indicate the fathers' level of education. The purpose of this question was to find if the level of fathers' education was a differentiating factor between higher and lower achievers. There were no significant differences between the higher and lower achievers at the college or high school level, on fathers' level of education.

Mothers' Level of Education -- Table IX shows the results of question six of the questionnaire in which the students

TABLE VII

THE NUMBER AND PERCENTAGES OF STUDENTS WITH AND WITHOUT A LIBRARY IN THE SCHOOL

	College					High School			
			Percentages				Percentages		
	High Achievers	Low Achievers	High Achievers	Low Achievers		High Achievers	Low Achievers	High Achievers	Low Achievers
Yes	22	22	96	100	Yes	24	23	100	96
No	1	0	4	0	No	0	1	0	4

TABLE VIII

FATHERS' LEVEL OF EDUCATION (NUMBER AND PERCENTAGE IN EACH CATEGORY)

Statement[+] Letter	College				High School			
			Percentages				Percentages	
	High Achievers	Low Achievers	High Achievers	Low Achievers	High Achievers	Low Achievers	High Achievers	Low Achievers
(a)	10	10	42	42	9	10	38	42
(b)	7	7	29	29	8	7	33	29
(c)	6	5	25	21	5	5	21	21
(d)	1	2	4	8	2	2	8	8

[+] Corresponding levels of education are as follows:
(a) less than Grade VIII
(b) Grade VIII to Grade XI
(c) some University or Technical
(d) University degree or diploma

TABLE IX

MOTHERS' LEVEL OF EDUCATION (NUMBER AND PERCENTAGE IN EACH CATEGORY)

Statement Letter[+]	College				High School			
			Percentages				Percentages	
	High Achievers	Low Achievers	High Achievers	Low Achievers	High Achievers	Low Achievers	High Achievers	Low Achievers
(a)	7	5	29	21	6	6	25	25
(b)	11	10	46	42	10	11	42	46
(c)	4	8	17	33	6	6	25	25
(d)	2	1	8	4	2	2	8	8

[+] Corresponding levels of education are as follows:

(a) less than Grade VIII

(b) Grade VIII to Grade XI

(c) some University or Technical

(d) University degree or diploma

were asked to indicate the mothers' level of education. The purpose of this question was to determine if the mothers' level of education was also a differentiating factor between higher and lower achievers. There were no significant differences between the higher and lower achievers at the college or high school level on this specific factor.

Number of Siblings in Family -- Table X shows the results of question eight of the questionnaire in which the students were asked to indicate the number of brothers and sisters in the family. The purpose of this question was to determine if the number of children in family would be a differentiating factor between the higher and lower achievers. The mean of each group was six, which showed there were no significant differences between the higher and lower achievers at the college or high school level on this variable.

Birth Order -- Table XI shows the results of question nine of the questionnaire in which the students were asked to indicate the number of older brothers and sisters they had. The

TABLE X

MEAN NUMBER OF CHILDREN IN FAMILY

	High College			Low College	
	High Achievers	Low Achievers		High Achievers	Low Achievers
$\bar{X}$	6	6	$\bar{X}$	6	6

$\bar{X}$ - Mean position for each group.

TABLE XI

MEAN POSITION FOR BIRTH ORDER OF HIGHER AND LOWER ACHIEVERS

	High College		Low College	
	High Achievers	Low Achievers	High Achievers	Low Achievers
$\bar{X}$	3	2	3	2

$\bar{X}$ - Mean position for each group.

purpose of this question was to determine if birth order would constitute a significant difference between higher and lower achievers. No significant differences were found between the higher and lower achievers at the college or at the high school level.

Type of High School -- Table XII shows the results of question ten of the questionnaire in which the subject was asked to indicate the type of school he had attended. The purpose of this question was to find if the type of high school attended was a factor which differentiated the higher and lower achievers. No significant differences were found between the higher and lower achievers at the college or at the high school level.

Socio-economic Level -- Table XIII shows the results of the socio-economic level. The parents name was obtained from the student Registration Permit. The approximate income per family was obtained from the Department of Labor. The purpose of this was to determine if

TABLE XII

TYPE OF HIGH SCHOOL ATTENDED (IN PERCENTAGES)

Statement Letter[+]	College				High School			
	High Achievers		Low Achievers		High Achievers		Low Achievers	
(a)	0		0		0		0	
(b)	9		0		9		0	
(c)	25	91	29	100	25	91	29	100
(d)	66		71		66		71	

[+] Corresponding rooms are as follows:

(a) one room
(b) two - three rooms
(c) four - six rooms
(d) six plus rooms

TABLE XIII

MEAN AVERAGES OF SOCIO-ECONOMIC LEVEL

	College		High School	
	High Achievers	Low Achievers	High Achievers	Low Achievers
Mean	$5,563.00	$6,104.00	$4,479.00	$6,365.00

Mean - average yearly salary per family.

Table XIV

RELIGIOUS AFFILIATIONS OF COLLEGE SAMPLES

Religion	Higher Achiever		Lower Achiever	
	Number	Percentage	Number	Percentage
Roman Catholic	6	25	6	25
Anglican	6	25	7	29
United Church	6	25	7	29
Other	6	25	4	17

TABLE XV

FATHERS' AND MOTHERS' OCCUPATIONS

Category[+]	College Fathers' Occupations		College Mothers' Occupations	
	Higher Achievers Percentage	Lower Achievers Percentage	Higher Achievers Percentage	Lower Achievers Percentage
0 - 1	15	15	25	29
2	14	14	14	13
3	16	17	30	33
4	8	7	3	4
5	6	5	2	0
6	4	3	0	0
7	5	4	0	0
8	7	7	4	5
9	25	28	22	24

[+] Corresponding occupations are as follows:

0-1 - Professional, Technical and Managerial; 2 - Clerical and Sales occupations; 3 - Service occupations; 4 - Farming, Fishing, Forestry, and related occupations; 5 - Processing occupations; 6 - Machines Trades occupations; 7 - Bench Work occupations; 8 - Structural Work occupations; 9 - Miscellaneous occupations.

the higher and lower achiever would differ significantly on this factor. No significant differences were found between the higher and lower achievers at the college or at the high school level.

Religion -- Table XIV shows the results of question three of the questionnaire. The students were asked to indicate their particular religious affiliation. The purpose of this particular question was to determine if the higher and lower achievers differed significantly on this factor. No significant difference was found between the higher and lower achievers at the college or high school level on this factor.

Fathers' Occupational Level -- Table XV shows the results of question four of the questionnaire. The students were asked to indicate their fathers' occupations. The purpose of this question was to determine if the higher and lower achievers at the college level differed significantly on fathers' occupational level. The higher achievers did not differ

significantly from the lower achievers on any of the nine categories of occupations.

Mothers' Occupational Level -- Table XV also shows the results of question six of the questionnaire. The students were asked to indicate their mothers' level of occupations. The purpose was to determine if the higher and lower achievers at the university level differed significantly on this factor. The higher achievers did not differ significantly from the lower achievers on the nine categories of occupations.

VI. Conclusion

A review of the analysis of results shows that two hypotheses were accepted fully, another accepted partially, and another rejected. A summary of the status of the hypotheses is as follows:

Hypothesis one which postulated intelligence differences and hypothesis three which postulated study habits differences were accepted fully.

Hypothesis two which postulated personality differences was accepted partially.

Hypothesis four which postulated speed reading differences was rejected.

A comment should be made here concerning hypothesis two which postulated personality differences. This hypothesis concerned three factors, namely: order, endurance and achievement. Analysis showed that for the factors of achievement and endurance the hypothesis should be rejected, but for the factor of order, the hypothesis could be accepted. It was necessary then to accept partially or to reject completely.

No significant differences were found between the higher and lower achievers on the following: age, books at home, library at school, fathers' and mothers' level of education, number of brothers and sisters in family, birth order, religion, parental occupational level, type of high school, and socio-economic level.

CHAPTER V

IMPLICATIONS OF THE STUDY AND CONCLUSION

In summary, the hypotheses for this study dealt with the following areas:

I. Intelligence Differences: Hypothesis one

II. Personality Differences: Hypothesis two

III. Study Habits and Attitudes. Hypothesis three

IV. Nelson-Denny Reading Differences: Hypothesis four

V. Other variables obtained from the questionnaire were: (a) Age; (b) Books at Home; (c) Books at School; (d) Fathers' Education; (e) Mothers' Education; (f) Number in Family; (g) Birth Order; (h) Type of High School; (i) Socio-economic Level; (j) Religion; (k) Fathers' Occupation; (l) Mothers' Occupation

VI. Conclusions and Recommendations

This chapter will deal with these various categories individually, discussing each in terms of present meaning and possible future consequences. Where possible, implications for future research will also be recommended.

I. Intelligence Differences

This study has shown that intelligence was significantly higher for the higher achievers at the university than it was for the lower achievers. There was no significant difference between the higher and lower achievers at the high school level. It can be concluded, then, that intelligence was a differentiating factor for higher and lower achievers at college, but was not a differentiating factor for the higher and lower achievers at the high school level. This may be because the type of study encountered at a university is probably more demanding than that at high school level. Another explanation may be that work at high school is more individually oriented than that at the university. There may be other influential variables as well. Grade eleven average and intelligence are probably better predictors of college success than grade eleven average only. Lower achievers at the university may perform at a higher level of performance if courses are more individually oriented. Reduced teacher-pupil ratio and intensive tutorial work in various subjects may help alleviate the low level of achievement for certain students.

II. Personality Differences

Can the personality traits of a student as measured by the Edwards Personal Preference Schedule affect achievement? This personality test gives fifteen separate scores, and analysis showed that significant differences were present on six of these scores. The differences were not always for higher achievers at college in comparison with the lower achievers, but also between the groups at the high school level. There were six traits out of a possible fifteen which were significantly different for the college higher and lower achievers. Two of the possible fifteen traits were significantly different for the higher and lower achievers at the high school level.

As shown in chapter IV, the Edwards Personal Preference Schedule gives fifteen personality traits.

The higher achievers scored higher than the lower achievers on the need to achieve, but the differences were not significant at the college or high school level. With a larger sample, the higher achievers may be statistically different on the need to achieve.

On the need for deference, the higher achievers scored significantly higher at the high school level than the lower achievers. No significant difference was found at the college level.

The higher achievers at college scored significantly higher than the lower achievers on the need for order. No significant difference was found at the high school level. At college, the need for order may be one factor that clearly differentiates between the higher and lower achievers. This trait actually is planning and organizing, and seems to be more crucial at the college level than at the high school level.

No significant differences were found between groups at the college or high school level on the need for affiliation, or the need for succorance.

On the need for intraception, the higher achievers at college scored significantly higher than the lower achievers. No significant differences existed between groups at the high school level. This means that higher achievers at college seem to search more for "understanding one's self" than lower achievers. The same difference does not exist between the high school groups.

The higher achievers at college scored significantly higher than the lower achievers on the need for dominance. No such difference existed at the high school level. Higher achievers at college seem to be more dominant than lower achievers. They seem to be more assertive and exert more leadership influence than the lower achievers. This is another factor which clearly

differentiates the higher from the lower achiever.

On the needs for abasement and nurturance, no significant differences were found between the groups at the college or high school levels.

The higher achievers at the college level scored significantly higher than the lower achievers on the need for change. No such differences were found between the high school groups. The desire to experience novelty, experiment and to try new things, seems to differentiate between the higher and lower achievers at college.

Finally, on the needs for endurance and heterosexuality, no significant differences were found between the higher and lower achievers at college or high school.

III. Study Habits and Attitudes

Educators such as Brown and Holtzman and Chahbazi realize today that studying is a science.[1] A person, if he is to succeed academically, must have good study habits.[2] From an analysis of the results it can be seen

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[1]William F. Brown and W.H. Holtzman, The Survey of Study Habits and Attitudes: A New Instrument for the Prediction of Academic Success, Educational and Psychological Measurement, 14, 1954, pp. 726-732.

[2]Parriz Chahbazi, Analysis of Cornell Orientation Inventory Items on Study Habits and their Relative Value in Predication of College Achievement, Journal of Experimental Education, 27, 1958, pp. 135-142.

that higher achievers at college do have better study habits than the lower achievers. Study habits and attitudes are two variables which are dependent upon learning, and perhaps with a well planned and effective study habits course both at the high school level and at the college level, academic performance may change in the positive direction. It may be that some students do not perform well academically because they do not actually know how to study properly. Counseling programmes at the high school level may do well to include such study habits courses. At the high school level many need a very intensive study habits course, designed as part of a special counseling programme for all freshmen students.

As shown in chapter IV, the Survey of Study Habits and Attitudes gives seven measurements of seven different factors.

On the Delay Avoidance factor, the higher achievers at the college level scored significantly higher than the lower achievers. On this particular factor it means that the higher achievers do not procrastinate about study as much as the lower achievers. Higher achievers, it seems, commence their studies and assignments earlier and complete them well in advance of any deadlines. The lower achievers wait until near the deadline dates before commencement and sometimes may complete their studies and

assignments even after any deadlines. No such differences were found to exist between the higher and lower achievers at the high school level.

In the case of the lower achievers at college, they may delay their studies because they do not know how to commence their task in a scientific manner. The higher achievers may be more scientific in approaching their work.

The higher achievers scored significantly higher on Work Methods than the lower achievers at the college and at the high school level. The factor of planning and effectively organizing study periods and assignments does differentiate the higher and lower achievers. The study of timetable scheduling and organization of study periods and assignments should be an integral part of a Study Habits Course at both the high school and the college level.

The higher achievers at university scored significantly higher than the lower achievers on the Study Habits factor. No significant differences were found at the high school level, although the higher achievers did score higher than the lower achievers. Good study habits are learned and can be learned in a course planned to do that. Improper study habits may be another factor contributing to lower academic performance. Also, it is quite likely that students who perform well

academically, associate with each other and pass on good study tips to one another. The lower achievers may also associate with each other but probably have few good study tips to pass on to one another.

The higher achievers scored significantly higher than the lower achievers at the college level on the factor of Teacher Acceptance. No significant difference was found at the high school level. Attitudes towards teachers are learned, and positive or negative ones can thrive in a particular group. The positive ones may thrive in a higher achievers group. Group counseling sessions may be used to extinguish negative attitudes and then to shape and reinforce positive ones. This type of counseling in the high schools and at university may prove very beneficial indeed, especially for freshmen students just embarking on a university career.

A significant difference was found between the higher and lower achievers at college and at the high school level on Educational Acceptance. This particular attitude may have resulted from family environment, and is subject to change through learning. Group counseling may be one such answer to this problem. The proper attitude towards education may indeed be the crucial starting point for academic success at the university.

A significant difference was found between the higher and lower achievers at the college level on the factor of Study Attitudes, but not at the high school level. The higher achievers at high school scored higher than the lower achievers, but the difference was not significant. Positive and negative attitudes towards study are also learned and can be modified. For the lower achievers a modification seems necessary. With a more positive attitude towards study, more effective study could result, consequently academic success may increase. Group counseling at both the high school and college level may be one answer to this problem.

Finally, on Study Orientation, a significant difference was found between the higher and lower achievers at college. A difference existed between the higher and lower achievers at the high school level, but the difference was not significant. Higher achievers seem to be more study oriented than lower achievers. Group counseling sessions as part of a study habits course may be one effective way to change study orientation among lower achievers.

In conclusion, the higher achievers at college scored significantly higher than the lower achievers on Delay Avoidance, Work Methods, Study Habits, Teacher Acceptance, Study Attitudes, Teacher Acceptance and Study Orientation. The higher achievers at college scored

significantly higher on seven factors out of seven.

The higher achievers at high school level scored significantly higher than the lower achievers on the factors of Work Methods and Educational Acceptance. No significant differences were found on the factors of Delay Avoidance, Study Habits, Teacher Acceptance, Study Attitudes and Study Orientation. Significant differences were found on two of the seven factors.

IV. The Nelson-Denny Reading Test

This reading test gives four separate scores and analysis showed a significant difference between higher and lower achievers on two factors.

On Vocabulary, a significant difference was found between the higher and lower achievers at college, but no significant difference existed between the higher and lower achievers at the high school level. The vocabulary encountered at the first year college level is probably more superior than that of high school in terms of quantity and quality. Much more reading is required from a college student in comparison to that required of the high school student. Vocabulary at the college may be improved through both reading and study habits courses. A more intensive reading and study habits programme may be necessary for all college freshmen who encounter reading problems.

On Comprehension, no significant difference was found between the higher and lower achievers at the college or at the high school level. It seems that both groups can comprehend what they read but the higher achievers who have significantly better study habits may be able to retain the information for a longer period of time.

Retention would be a factor in academic performance. On Vocabulary and Comprehension combined the higher achievers at college scored significantly higher than the lower achievers. No significant differences were found at the high school level. Vocabulary and comprehension combined do differentiate the higher from the lower achiever at college.

On Speed Reading no significant difference was found between the higher and lower achievers at the college or high school level. Vocabulary plus comprehension may be the important factors. It seems that while the higher and lower achievers read at about the same speed, vocabulary plus comprehension of the higher achievers is significantly higher than that of the lower achiever. The amount of knowledge gained seems to be the major factor, not how fast the material is read.

In conclusion, the higher achievers at college scored significantly higher on the factors of vocabulary

and total. No significant differences existed on the factors of Comprehension or Speed Reading. No significant differences were found on either of the four factors between groups at the high school level. A comprehensive reading programme may be a vital necessity for many of our college freshmen. Diagnosis of reading difficulties may be necessary before a student enters university, so that appropriate action may be taken to have the student register for a reading course, which may also in fact be a credit.

At the high school level, more diagnosis of reading problems may be necessary. Special reading programmes at a credit level may be an answer to this problem. A study habits course could supplement the reading programme. More research could be done in both reading and study habits areas.

V. The Questionnaire

The questionnaire posed questions on twelve other variables: Age, Presence of Books at Home, Presence of a Library in the School, Fathers' Education Level, Mothers' Education Level, Number of Brothers and Sisters in Family, Birth Order, Type of High School Attended, Socio-economic Level of Parents, Religion, Fathers' Occupational Level and Mothers' Occupational Level. The higher achievers at

the college or high school level did not differ significantly from the lower achievers on any of these factors.

VI. Conclusions and Recommendations

On the whole, this study has shown that higher achievers at college do differ significantly from lower achievers on certain specific factors. The higher achievers at the high school level also differ significantly from the lower achievers on certain specific factors. Factors such as reading, study habits, and attitudes are subject to charge. If a student has the intellectual potential, but has reading problems and undesirable study habits, he consequently achieves poorly in the academics. Then the high school and university should assume some responsibility in the correction area. Specific programmes for these special students are highly desirable and vital.

In conclusion, the following recommendations are made for high school Principals, Guidance Counselors, University Administrators and for future researchers who might further study the differences between the higher and lower achievers:

Recommendations for High School Principals, Guidance Counselors and Researchers.

1. More research is needed on the lower achiever, especially

on factors that can be modified with special programmes.

2. More diagnosis of problem areas (Reading and Study Habits) for the lower achievers is needed so that programmes to meet their needs are designed by both high schools and University Administrators.
3. More career planning in high schools may be necessary, so that students will have clear goals in sight. Lack of interest in their work may be another factor contributing to lower achievement. Faulty or inadequate career planning is greatly in need of research both in our high schools and the University.
4. More group counseling for lower achievers may indeed be a vital necessity, and more research could prove invaluable in this area.
5. A continuation of Foundation courses at the University should help the lower achiever. Perhaps a similar type of course should be instituted at the high school level.
6. Foundation courses should include programmes and guidance on study habits.
7. More research on personality differences should be carried out. Traits and attitudes are subject to modification through different types of therapy. Group and individual counseling may be absolutely

necessary in this area.

8. Larger randomly selected groups could be used to study the factors on the questionnaire used for this study.
9. Studies should be conducted on the Edwards Personal Preference Schedule, the Nelson-Denny Reading Test and the Survey of Study Habits and Attitudes to check their validity in diagnosing these problem areas among lower achievers.
10. A study be done on the attitudes of teachers and faculty towards lower achieving students.
11. A study be done to help determine perhaps the best teacher to teach lower achievers.
12. A counseling programme at the University designed for first year students only may be a model for future years.
13. A study also be done on other factors not dealt with in this study.
14. A pre-University diagnostic programme for first year students should be compulsory.

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APPENDICES

APPENDIX A

LETTER TO SUBJECTS

20 Blackwood Place
St. John's, Newfoundland
May 1, 1971

Dear

The Department of Educational Foundations has approved a thesis proposed in the area of achievement at the College level.

Four measurements, a) Intelligence, b) Personality, c) Reading, d) Study habits and attitudes, will be given. A questionnaire will also be given to each student approximately one month after administration.

I would appreciate your co-operation in helping the University and specific students by participating in the study.

You can come at the times listed or any other time convenient for you. Transportation provided free. Thank you.

A. J. Simmonds

Monday--Friday, 9:00 a.m. - 9:00 p.m.

APPENDIX B

QUESTIONNAIRE

QUESTIONNAIRE

1. Name _____

2. Age _____

3. Religion _____

4. What is your father's occupation? _____

4. What is your father's level of education?

   (1) Less than Grade VII _____

   (2) Grade VIII to XI _____

   (3) Some university (technical) _____

   (4) University degree or diploma _____

6. Mother's occupation before or during marriage?

   _____

7. Mother's level of education?

   (1) Less than Grade VIII _____

   (2) Grade VIII to XI _____

   (3) Some university (technical) _____

   (4) University degree or diploma _____

8. How many brothers and sisters do you have? _____

9. How many older brothers and sisters do you have? _____

10. In what type of school did you take Grade XI?

    1 room _____ 2 - 3 rooms _____

    4 - 6 rooms _____ 6+ rooms _____

11. Are there books in your home? _____

12. Is there a library in your school? _____

APPENDIX C

RAW SCORES ON ALL TESTS

Appendix C

Summary of Data	High College $\bar{X}$		Low College $\bar{X}$	
Factor Measured	High High School	High High School	High High School	Low High School
Intelligence	112	112	108	105
Need to Achieve	11	13	12	9
Deference	11	12	11	13
Order	9	10	11	12
Exhibition	12	14	13	14
Autonomy	13	14	16	13
Affiliation	16	15	13	16
Intraception	17	17	15	13
Succorance	11	11	9	13
Dominance	10	12	11	10
Abasement	17	15	14	15
Nurturance	18	19	15	19
Change	15	14	19	19
Endurance	15	12	12	12
Heterosexuality	21	20	21	17
Aggression	21	14	16	12
Delay Avoidance	24	25	16	16
Work Methods	29	23	24	17
Study Habits	54	48	40	34
Teacher Acceptance	28	25	19	19
Educational Acceptance	29	24	19	17
Study Attitudes	57	50	41	38
Study Orientation	106	103	79	66
Vocabulary	40	37	29	25
Comprehension	19	18	17	18
Total	55	52	46	43

Appendix C (contd)

Summary of Data	High College $\bar{X}$		Low College $\bar{X}$	
Factor Measured	High High School	Low High School	High High School	Low High School
Speed Reading	27%	27%	28%	28%
Age	18%	18%	18%	17%
Students with Books in the Home	92%	92%	92%	92%
Students with a Library in the School	96%	100%	100%	96%
Fathers with less than Grade VIII education	42%	42%	38%	42%
Fathers withGrade VIII to Grade XI education	29%	29%	33%	29%
Fathers with some University or Technical training	25%	21%	21%	21%
Fathers with University Degree or Diploma	4%	8%	8%	8%
Mothers with less than Grade VIII education	29%	21%	25%	25%
Mothers with Grade VIII to Grade XI education	46%	42%	42%	46%
Mothers with some University or Technical training	17%	33%	25%	25%
Mothers with University Degree or Diploma	8%	4%	8%	8%
Number of Children in Family	6	6	6	6
Birth Order	3	2	3	2
Number attending 1 room School	0%	0%	0%	0%
Number attending 2 - 3 room School	9%	0%	9%	0%
Number attending 4 - 6 room School	25%	29%	25%	29%
Number attending 6+ room School	66%	71%	66%	71%
Socio-economic Level	$5563	$6104	$4479	$6365

Appendix C (contd)

Summary of Data	High College $\bar{X}$		Low College $\bar{X}$	
Factor Measured	High High School	Low High School	High High School	Low High School
Roman Catholic	25%		25%	
Anglican	25%		29%	
United Church	25%		29%	
Other	24%		17%	
	Fathers of		Mothers of	
Parents Occupations	Higher Achievers	Lower Achievers	Higher Achievers	Lower Achievers
Professional, Technical and Managerial	15%	15%	25%	29%
Clerical and Sales Occupations	14%	14%	14%	13%
Service Occupations	16%	17%	30%	33%
Farming, Fishing, Forestry and related Occupations	8%	7%	3%	4%
Processing Occupations	6%	5%	2%	0%
Machines Trades Occupations	4%	3%	0%	0%
Structural Work Occupations	7%	7%	4%	5%
Miscellaneous Occupations	25%	28%	22%	24%