AN ASSESSMENT OF THE SUCCESS OF C AVERAGE HIGH SCHOOL GRADUATES IN GRAND RAPIDS JUNIOR COLLEGE

Thesis for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY

Robert A. Williams

1963

This is to certify that the

thesis entitled

AN ASSESSMENT OF THE ACHIEVEMENT OF C AVERAGE HIGH SCHOOL GRADUATES IN GRAND RAPIDS JUNIOR COLLEGE

presented by

ROBERT A. WILLIAMS

has been accepted towards fulfillment of the requirements for

Ph.D. degree in Education

Walter F. Johnson
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Date November 12, 1963

ABSTRACT

AN ASSESSMENT OF THE SUCCESS OF
C AVERAGE HIGH SCHOOL GRADUATES IN
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by Robert A. Williams

The general purpose of this study was to consider the college achievement of a group of C-average high school graduates who enrolled in Grand Rapids Junior College. Specifically, this study was concerned with whether results from different types of psychometric instruments could aid significantly in the prediction of the college academic achievement of these students.

The test variables selected were scores on the School College Ability Test, the Cooperative Reading Test, and the Cooperative English-Mechanics of Expression Test, all of which have been used by colleges and universities for predicting the success of their applicants. To these was added the Michigan State University M-Scales, developed by a group of researchers under the direction of William W. Farquhar and designed to quantify motivation.

The study opened in September, 1961, with the 412 students who enrolled in Grand Rapids Junior College and who had graduated from high school with academic averages between 1.5 and 2.5 on a 4.0 scale. At the end of the first semester, fourteen of the students had dropped out of college before the deadline date of

dropping without penalty. The study considered, therefore, 398 students.

It was planned to investigate the relationships between the variables and the criterion, grade-point average, by means of three statistical procedures: simple correlations, multiple regression analysis, and multiple discriminant function analysis.

Coefficients of correlation between two of the variables and the criterion, grade-point average, were significant at the .01 level, three were significant at the .05 level, and the remainder were not significant. However, all of these correlations were so low as to offer little help in predicting college academic achievement, and the statistical analysis was terminated.

When psychometric instruments failed to add materially to the prediction of the college achievement of C-average high school graduates, it was decided to interview students in depth to try to discover what social and emotional factors might motivate C-average high school graduates to successful college achievement. Each of these interviews indicated dynamic forces and events which made the change from high school achievement to college achievement understandable.

The results of this study lend support to that current literature which questions the use of psychometric instruments in predicting the academic achievement of such a group as reported in this study. The use of interview data seems more helpful in

explaining the college success of this population.

Recommendations are made for future studies of the C-average high school graduate.

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By

Robert A. Williams

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

College of Education

1963

ACKNOWLEDGEMENTS

To my wife, for the support and help which made a doctoral program possible;

To Dr. Walter F. Johnson, friend, advisor, chairman of my guidance committee, for continuing counsel in my training;

To Dr. Douglas D. Blocksma, for much of the design of this study, and for help in reporting it;

To other members of my committee, Dr. Bufford Stefflre, Dr. Kenneth Hance and Dr. Paul King;

To my mother, for help in typing and editing much of the material for this study;

To the Grand Rapids Foundation, for financial support for this research.

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CHAPTER I

INTRODUCTION

College Admission practices and their attendant problems have undergone great change during the last two decades in the United States. Increasing numbers of high school graduates have combined with a greater press for post-high-school education to produce a flood of applications to colleges and universities. A whole series of admissions problems has arisen as a result of this situation - multiple applications; alumni pressures for acceptance of friends, sons or daughters, or outstanding athletes; varying standards of evaluating high school achievement; and so on. One of these problems, and the one with which this study will be concerned, is the increasing difficulty of high school students with average grades to gain admission to a college, even though studies have shown that C average high school students sometimes make successful college students.

College admission officers have incumbent upon them the duty of granting admission to those students among their applicants who are likely to profit most from the educational experience a college has to offer. Prediction studies have pointed to academic success in high school as the best single criterion for academic success in college. Increasingly, therefore, colleges have been limiting their enrollment to A and B average high school graduates and have not been granting admission to C average high school graduates.

Two types of colleges have traditionally offered admission to virtually all high school graduates regardless of academic achievement. One of these is the publicly supported institutions of certain states (e.g. Ohio) whose states policy is that admission shall be granted to all graduates of state accredited high schools. The other type of college which has usually granted admission on a similar basis is the publically supported Junior College.

Against this background of problems surrounding college admissions, this study of average-achieving high school graduates in a Junior College was initiated.

THE PROBLEM

The problem with which this study is concerned is an assessment of what the C average high school graduate will be able to achieve in a Junior College curriculum. This assessment is a part of a comprehensive evaluation of what Grand Rapids Junior College students are able to do in the various curricula of the college.

More specifically, this study using an ability test, an English usage test, a reading test and an experimental instrument designed to measure academic motivation proposed to explore this problem by testing the following four hypotheses:

(1) Academic Ability. Measures of academic ability will significantly differentiate between those C average high school graduates who succeed in college and those who do not succeed.

(2) Reading Ability. Measures of reading ability will significantly differentiate between those C average high school graduates who succeed in college and those who do not succeed.

(3) English Mechanics. Measures of facility in the use of English mechanics will significantly differentiate between those C average high school graduates who succeed in college and those who do not succeed.

(4) Motivation. Measures of Academic motivation will be significantly higher among those C average high school graduates who succeed in college than among those who do not succeed.

Each of these hypotheses establishes a continuum, all four of which are schematically presented in Fig. I. It is hypothesized that the farther toward the high side (the left of Fig. I) of the continuum a C average high school graduate is placed, the greater his chances of academic success in college.

Fig. I, Continua of Four Factors Tested

SUCCESSFUL STUDENT	FACTOR	UNSUCCESSFUL STUDENT
High College Ability	College Ability	Low college Ability
High English Mechanical Facility	Mechanics of Expression	Low English Mechanical Facility
High Reading Ability	Reading	Low Reading Ability
High Motivation	Motivation	Low Motivation

BACKGROUND OF THE STUDY

The Junior College in Grand Rapids, Michigan, is a municipally supported and directed Junior College under the Grand Rapids Board of Education. Its present student body is composed of 3,320, of whom nearly 60% are residents of the city. Of the remaining students (approximately 1,300), approximately 65% come from the Grand Rapids Metropolitan area.

The enrollment at this college has grown to its present level from an enrollment of 718 in 1952 and the college administration has cited three main reasons for this increase:

(1) The higher cost of education at out-of-town colleges and universities forced many to seek education at a near-by school where costs of board and room can be absorbed in the family budget.

(2) A greater public demand for education at all levels of society has increased all post-high school education.

(3) State and private colleges and universities have demanded ever better high school achievement records from entering freshmen. As a result, students who previously might have been admitted without questions to those institutions are now refused admission and they turn to the Junior College.

When the Board of Education did not provide increased facilities to accommodate the Grand Rapids Junior College enrollment increase, the college administration took steps to limit its entering class. The first of these steps was to deny first semester admission to any high school student whose over-all high school average fell below 1.5 on a four point grading scale. This was done for three reasons:

(1) Admission of these students the second semester would not materially affect over-all enrollment figures since they would take the place of those who dropped out of college during or at the close of the first semester as a result of so-called "normal attrition."

(2) It was hypothesized that delaying admission one semester while the high school graduate assumed a role other than that of a student might positively affect his motivation for college work.

(3) It was hoped that the usual reduction in student-faculty ratios the second semester (see (1) above) would result in the student's receiving greater individual attention.

The second step the College Administration took was concerned with all entering freshmen whose high school grade point average was between 1.5 and 2.5 on a four point scale. These students

were limited to a single curriculum, the General Studies Curriculum, and were required to take an orientation course taught by members of the college counseling staff. These limitations were for the purpose of allowing these students time to adjust to college work and life before making a curriculum selection.

Finally, to evaluate these admission procedures, the Administrative Staff of the College sought for ways to do research on these C and D average high school graduates who were enrolling at Junior College.

SCOPE OF THE STUDY

The scope and the limitations of this study should be specifically understood. First, since this study is primarily an exploratory study, any generalizations beyond the specific population considered in the study must be made with caution.

Secondly, the population considered in this study is made up of all who choose to enter Grand Rapids Junior College and who had a C average high school record. The basis for selection for the study was, therefore, of high school teachers' grade reports, the reliability of which many studies have questioned. Therefore, the population is homogeneous only in that the particular secondary school from which the individual student graduated rated him a C average student.

ORGANIZATION OF THE STUDY

In Chapter II of this study, a review of the literature pertinent to the problem is presented. Material from recent studies of the prediction of college success is presented; and the literature regarding the college success of C average high school graduates is considered.

Chapter III is made up of a description of the population, the instruments used, the methods of collecting the data, and the methods of analyzing the data.

In Chapter IV, an analysis of the objective data is presented. The chapter includes tables of results of the statistical treatment of the data and a discussion of the significance of the results.

The depth interviews used to validate the objective data are considered in Chapter V, while Chapter VI contains a summary of the study and its implications.

CHAPTER II

REVIEW OF THE LITERATURE

A review of the literature reveals a number of studies on the general problems of college admission and the prediction of college success, much less on these same problems in junior colleges, and very little on the average high school graduate and his admission to and success in college.

COLLEGE ADMISSION AND PREDICTION OF ACHIEVEMENT

Fishman and Passanella (15) found that 580 college admission selection studies had been reported from 1950 to 1960. They analysed these studies to determine whether the predictors and the criteria were based on intellective (test scores, course grades) or nonintellective (personality, motivational and attitudinal measures) characteristics. Table 2.1 is a summary of the results of their survey.

In general, Wallen (33) found the correlations between academic performance and group tests ranged between .30 and .60 with the best prediction in the academic areas. Hansmier (19) reported a correlation of .71 between the composite score of the Iowa Tests of Educational Development and freshman grade point averages.

Scannell (27) studied the prediction of college success by achievement test scores, and reported a year-by-year increase in the accuracy of prediction when using scores from grades 4 through 12.

Table 2.1 - Predictor Criterion Combinations (15)

Number Predictors	Criteria	Studies (S) Number	Percent	Number of Colleges(C)
1. Intellective only	Intellective only	408	70%	148
2. Intellective only	Nonintellective only	2	a	2
3. Intellective only	Both	2	a	2
4. Nonintellective only	Intellective only	64	11	38
5. Nonintellective only	Nonintellective only	17	3	10
6. Nonintellective only	Both	9	2	9
7. Both	Intellective only	70	12	44
8. Both	Nonintellective only	5	1	5
9. Both	Both	3	a	2
	Total	580	99%	b

a Less than 1 percent.

b Data are nonadditive.

Although the studies cited above are typical of many other investigations reported in the literature, some investigators raise questions important to this study. Spaulding (28) found that adjusted high school grades were better predictors of college freshman achievement than were achievement test results.

Davis (9) reported that the extent to which achievement test scores predict academic achievement in college varies from college

to college and from instructor to instructor within the college. He went on to point out resulting errors in the way counselors and admission people use "college profiles" to predict college success.

Fricke reviewed 27 studies of college admissions and concluded that statistical prediction from both achievement test data and high school grades was more accurate than clinical prediction of college success. He added that high predictive accuracy might not be desirable since such accuracy would seem to imply that colleges could neither help poor students nor challenge good ones.

Many studies have been made in the prediction of college success from psychometric measures. They report coefficients of correlation ranging from .30 to .60. However, there is evidence that high school grades are better predictors of college success; and some studies question such predictions because of differences among colleges and because high predictive validity implies little help to poor students and little challenge to good ones.

JUNIOR COLLEGE ADMISSIONS AND PREDICTION OF ACHIEVEMENT

The problems of admissions to junior colleges are not reported as extensively as those of colleges in general. Flexibility in junior college admissions is necessary, reports O'Connell (24), since "in most states, community colleges are required to admit high school graduates without regard to the quality or depth of their secondary school preparation."

With a basic pattern of admission for all high school graduates, the literature on junior college admissions and on predictions of success is limited to improvement within this framework. O'Connell, in the article cited above, calls for the use of psychometric measures to detect the need of remedial work and to encourage emphasis in the areas of greatest academic ability.

Chambers (3) reviews so-called "student attrition" or "student mortality" and suggests that the junior college provide a common curriculum for all students the first semester. This would provide a "period of adjustment by the student" who during the second semester would be required to select a regular curriculum for his subsequent work. In another article, Chambers (4) calls for intensive work with the junior college counselors to aid the student in this transitional period. Finally, Chambers calls for admission of greater numbers of students:

> Since it is impossible to predict scholastic achievement with great accuracy, more students should be permitted to attempt a program than will succeed in it ...

The junior college admission problems, then, are basically different than those of most other colleges because the junior college usually admits all high school graduates. Some studies have advocated that this "open door" policy be supplemented by the use of test scores to aid in placement or by a course of study common to all curricula to help the student to adjust to college.

ADMISSION OF THE AVERAGE HIGH SCHOOL GRADUATES

The literature offers few studies dealing with the admission and success of C average high school graduates in college. Coleman's study which is reported in Chapter VI and Chellevold's study in the same chapter both involved a small number of students, some of whom were C average high school graduates. Their academic success in their college classes was at least comparable to that of other students regularly admitted to the college.

The little research and experimentation reported with C average high school graduates reflects the need for careful study of this student, the problems of his admission to college, and the prediction of his academic success in college.

SUMMARY

A study of the literature reveals that although much attention had been centered on college admission problems and predictions of college success, only a small number of studies have focused on these problems in the junior college, and relatively little attention has been centered on C average high school graduates. Predictions of the college adademic achievement have produced correlation coefficients from .30 to .60 in most prediction studies. However, evidence is available that students whose high school achievement is only average are able to succeed academically in college.

CHAPTER III

THE DESIGN

The design and methods used in this study are described under five main headings: 1) The Population, 2) The Methodology, 3) Procedures for Collecting the Data, 4) Procedures for Analyzing the Data, and 5) the Null Hypotheses.

THE POPULATION

In September, 1961, 2,993 students enrolled in Grand Rapids Junior College. This enrollment is summarized in Table 3.1 and categories from which the population for this study was taken are indicated.

Table 3.1 - Enrollment Classifications, GRJC September, 1961

Male	1,787[1]	Freshman	2,028[1]	Residents	1,813	Day-Comb.	2,098[1]
Female	1,206[1]	Sophomore	897	Non-res.	1,180	Evening	895
		Post-Grad.	68				
Total	2,993	Total	2,993	Total	2,993	Total	2,993

[1]Categories from which the population for this study comes.

The population[1] used in this study was composed of all the freshmen students entering a day or day-evening combination program whose high school grade-point average (as evaluated by the Registrar's office) was between 1.5 and 2.5 on a four point grading

[1]This population might have been referred to as a "sample" of

scale, i.e. in the C range. No distinction was made for male or female, resident or non-resident. Students whose programs included only eveining school classes were not considered for the study since their classification as Special Curriculum students exempted them from entrance testing.

At the end of the second week of classes, when class enrollments had begun to stabilize, it was found that 412 students were assigned to the General Studies Curriculum; that is, their high school grade-point average was between 1.5 and 2.5 and they had satisfied other entrance requirements. Of these 412 students, 313 were males and 99 were females. Within the next two weeks, one of the females and two of the males withdrew from Grand Rapids Junior College. The population with which this study was concerned, therefore, was 409 students, 311 males and 98 females.

It should be noted that females comprise only 21.8% of the study population while they make up 40.3% of the freshman class. Since greater academic achievement in high school would bar a student from the General Studies Curriculum, this disproportionate number of girls is consistent with research which in general finds girls achieving at a higher level in secondary schools than boys.

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the C average high school graduates who enter college. However, since this study was concerned with all of the C average high school graduates who entered Grand Rapids Junior College, it has been referred to in this report as a "population."

THE METHODOLOGY

This part of Chapter III contains a discussion of the instruments used in this study as well as a description of the interview structure which was added to the study while it was under way.

The Instruments. The four psychometric instruments used in this study were the School - College Ability Tests, the Cooperative Reading Test, the Cooperative Mechanics of Expression Test and the Michigan State University M. Scales.

The School College Ability Tests are published by the Cooperative Test Division of Educational Testing Service of Princeton, New Jersey, and Los Angeles, California. They were copyrighted in 1957.

Table 3.2 summarizes the four parts of the School and College Ability Tests, listing the kind of items found in each part, the number of items and the time allotment:

Table 3.2 - Characteristics of SCAT (11)

Part	Kinds of Items	Number of Items	Time (Minutes)
I	Sentence understanding	30	15
II	Numerical computation	25	20
III	Word meanings	30	10
IV	Numerical problem solving	25	25

The tests yield three scores: a Verbal score, based on Parts I and III; a Quantitative score, based on Parts II and IV; and a Total score, based on all four parts.

The Manual for Interpreting Scores (11) for the SCAT Test states that they "aid in estimating the capacity of a student to undertake the academic work of the next higher level of schooling. They measure the two kinds of school-related abilities which are most important in the greatest number of school and college endeavor; verbal and quantitative."

Fowler (16), in commenting on the purpose of these tests, reports that the publishers of these tests make

> no direct reference to intelligence but prefer to consider their tests measures of 'school-learned ability.' They claim that SCAT measures 'specific developed abilities rather than abstract, hard-to-explain psychological traits.' However, in practice, SCAT will be used in much the same way as ACE has been used: for identifying the overachiever and underachiever; for counseling the individual student; for comparing average abilities of different groups of students; and so on... Certainly, the reported validity coefficients are at least as high as, and occasionally higher than, similar coefficients reported for other tests of this type. We must conclude that on the evidence presently available SCAT shows promise of being an efficient measure of future college success.

Norming data for SCAT tests were obtained from 315 schools in 44 states and from 99 colleges in 33 states. Grand Rapids Junior College was included among the colleges from which the original norming sample was drawn. Davis (8) comments that "the samples on which the fall percentile norms are based were carefully constructed

to be representative of students in grades 4 - 14, in American schools and colleges willing to participate in such a program."

Several validity studies from five different colleges are cited in the 1958 SCAT - Step Supplement (1). The studies are all concerned with entering freshman and a total of 2,948 are included in eleven studies. Correlations between School and College Ability Tests at entrance to college and semester or year-end grades range from .143 to .57 with a median correlation of .51 with five of the studies reporting correlations at or above .55.

Reviewing these tests in Buros' Fifth Mental Measurements Yearbooks (16), Fowler writes:

> Undoubtedly, SCAT is a superior test series. It clearly shows the result of careful planning, and excellent experimental programme, and the use of sound, up-to-date statistical procedures."

The Michigan M-Scales[1] were developed by a group of researchers at Michigan State University under the direction of Dr. William W. Farquhar. The M-Scales are still in their early stages of development and were used in this study as a research instrument in an effort to quantify motivational factors.

The M-Scales consist of four tests, the first of which is the "Generalized Situational Choice Inventory." This particular test has 80 items. In each of these, the student is presented with two situations between which he must express a preference. The second

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[1]These scales were developed under the auspices of the United States Office of Education, Department of Health, Education and Welfare, Project 846 (8458) "A Comprehensive Study of the Motivational Factore Underlying Achievement of Eleventh Grade High School Students.

of the M-Scales is the "Preferred Job Characteristic Scale." This part of the instrument presents 48 pairs of job characteristics and the individual is asked to choose one of each pair which he feels best expresses his own feelings. The third test is the "Word Rating List." Here are presented 38 adjectival, self-descriptive constructions. By rating each of these constructions on a four point scale, the individual expresses how he believes his teachers feel about him. The fourth part of this instrument is the "Human Trait Inventory." Again, a four point rating scale is used, and the student is asked to rate himself from "never" to "always" with regard to certain personal traits, activities and feelings.

The M-Scales were constructed on the assumption that under- and over-achieving students would significantly differ in motivation. Taylor (31) reported that the population for the project

> consisted of 4,200 eleventh grade students from nine high schools in eight Michigan cities. Schools were selected, a priori, to represent the full range of socio-economic environments. From this group, under and over achievers were identified using the Two Stage Regression Model reported by Farquhar... The total number of individuals in each category was randomly dichotomized to provide validation and cross validation groups. The validation samples contained 81 male over achievers and 69 male under achievers, 91 female over achievers and 85 under achievers. The cross validation samples contained 76 male over achievers and 68 male under achievers, 87 female over achievers and 82 under achievers.

A series of seven hundred twenty items was used to test theory which had been developed relating to the motivational situation in the academic setting, personality characteristics and parental

factors. The results were then treated statistically to identify items which significantly discriminated "between under- and over-achieving (high and low motivated) eleventh grade high school students." (31)

Farquhar (14) reports a study of the predictive efficiency of the M-Scales. The correlations between sub-scales and the grade point criterion for 261 females ranged from .27 to .42 and for 254 males from .32 to .51. This same study reported a multiple regression equation prediction of grade point average from the "Verbal Reasoning" sub-test of the Differential Aptitude Test plus the four sub-scales of the M-Scales. Multiple correlations for males and females were .74 and .66 respectively, with Beta weights as follows:

Table 3.3 - Four Variable Predictions of Achievement Criterion with Multiple Correlations and Corresponding Beta Weights.

N		Multiple r
Males (N = 254)	.4427 (DAT-VR) +.1106 (GSCI) +.2274 (HTI) +.0815 (PJCS) +.135 (WRL)	+ .74
Females (N +.261)	.4985 (DAT-VR) +.0759 (GSCI) +.0621 (HTI) +.0568 (PJCS) +.1706 (WRL)	+ .66

Farquhar concludes:

> In all cases the addition of the M-Scales significantly increased the prediction. (Beta weights significant at the .05 level). The increase was much more marked for males

> than females, as was the case with adding the four sub-scales individually. The multiple correlation based on total M-Scales scores was not as great an increase over using DAT (VR) alone as was the individual weighting of the four sub-scales."

Therefore, since the experimental use of the M-Scales as a predictor of academic achievement had been successful at the high school level, their inclusion in this study seemed indicated.

The Interviews. The original design of this study did not include personal interviews with members of the population. It only included assembly of the data from the test instruments described above and the analysis of these data. Since this analysis of the data produced results which were not satisfying in explaining the motivation shown in the college achievement of C average high school graduates, the design of the study was expanded to include interviews with selected members of the population in order to discover clues to valid explanations of this motivation. This additional technique was suggested by such studies as Berdie (2) and Peck, Havighurst et. al (26) who report that in their study of Prairie City youth

> ...in order to obtain information about motives, attitudes and other inner personality characteristics, more intensive study (than intelligence tests, achievement tests, etc) was required, using more searching and more time consuming techniques (such as interviews, projective techniques, essays and the like).

The first two parts of the interview outline were designed to

obtain data for identification. The third part of the interview was recorded and consisted of six questions which were designed to explore a student's feelings about being a C average high school student. A copy of the interview sheet is included in Appendex A of this report.

The six questions which appear in part III of the interview outline were not always asked in the same form or order as they appear on that outline. Rather, the subject was allowed as much freedom as possible in changing from one area to another as he chose, in whatever order he chose. The questions served as a check list to assure that all students interviewed covered the same general areas.

PROCEDURES FOR COLLECTING THE DATA

All students who had entered Grand Rapids Junior College with a C high school average were assigned to the general Studies Curriculum and were required to take a course titled "Psychology B." This course, an orientation - to - college type course, was the only course required of all the students included in this study; so the faculty counselors who taught this course were asked to cooperate in the study. After two weeks of the semester had passed and class changes had virtually stopped, the membership lists of all sections of Psychology B were combined and the scores on the entrance test battery for the 412 enrolled students were assembled.

While this was being done, the instructors in these classes

met and agreed upon a schedule for the administration of the Michigan State M-Scales. Since these classes met once each week in groups of twenty-five or thirty students, it was decided to devote two small group sessions to the administration of this test. Thus, all students took the test within a twelve-day period during the third or fourth week of the semester. During those weeks, three additional students left school, so that 409 students became the population upon which this study was based.

The scoring of the tests and the recording of the test results were now completed. Since the subjects' first semester of college work comprised the achievement criterion of this research, the closing date for the study was set at mid-term of the second semester. This allowed sufficient time for term grades and grade-point averages to be received from the Registrars' Office; it also allowed time to discover which of the population did not return for the second semester.

At the closing date of the study, the students' grade point average was added to the data already collected. At the same time, each student was assigned to one of five adademic status categories as follows:

(1) Continued in good standing
(2) Continued on probation
(3) Dropped out of school before end of first semester
(4) Dismissed at end of first semester
(5) Dropped out at end of first semester

It should be noted that no disciplinary action by the college

directed toward any member of this group was taken during the time of this study. Therefore, all students in probation or dismissed categories were placed there on the basis of poor achievement.

PROCEDURES FOR ANALYZING THE DATA

To begin the analysis of the data, the following items were coded for each student on an IBM card:

(1) Identifying data including student number and sex.
(2) Test scores on the SCAT, Cooperative Reading and English Tests, and the Michigan State M-Scales.
(3) Grade-point average at end of semester plus student's academic status. From these data, a three step statistical analysis was planned.

The initial step in the statistical analysis was to compute coefficients of correlation between each of the variables measured and the grade-point average for the first semester. This was to test for possible linear relationships.

Second, if the results of this analysis seemed to show relationships between the various test scores and grade-point averages which were both statistically significant and useful for predictive purposes, a multiple regression analysis was planned to study the relative weights of the variables. An additional purpose of this regression analysis was to test the strength of a straight-line, linear relationship between the criterion (GPA) and the variables (test scores) as a group.

In this multiple regression analysis, the following variables were to be explored:

(1) SCAT Verbal and Quantitative Scores.
(2) Cooperative English, Mechanics Scores.
(3) Cooperative Reading Vocabulary, Speed and Level of Comprehension Scores.
(4) Michigan State M-Scale GSCI, PJCS WRL, and HTI Scores.

Total scores were not to be included in order to avoid redundancy within the multiple regression.

Finally, one additional statistical analysis operation was planned, contingent upon the finding of correlations between the criterion and the individual test scores which were significant and useful for predictive purposes. This additional technique was the use of discriminant analysis in order to determine whether the instruments used would differentiate among the five academic status categories of students found at the end of the study. (i.e. students continued on probation, students dismissed, etc.) This statistical technique was selected as appropriate since Tatsuoka and Tiedeman (29) found that its issues are "significance, distance, direction and assignment" and since

> ..."disciminant analysis can be used as a unified approach in solving a research problem involving multivariate comparison of several groups which is likely to have as its three phases, (a) the establishment of significant group differences, (b) the study and explanation of these differences, and finally (c) the utilization of multivariate information from the sample studied in classifying a future individual known to belong to one of the groups represented."

The determination of the beta weights from the multiple regression analysis and the eigen values from the discriminant function analysis was contingent upon the finding of statistically significant and predictively useful linear regression relationships between the test variables and the criterion of grade-point average. However, if such relationships were not found, the statistical analysis was to be terminated after the coefficients of correlation between the variables and the criterion were established.

THE NULL HYPOTHESES

The following is a restatement of the hypotheses in null form, i.e. that no significant relationships is expected between each of the variables and the criterion variable (GPA):

Ho_1 There is no significant difference in measures of academic ability between those C average high school graduates who succeed in college and those who do not succeed.

Ho_2 There is no significant difference in measures of reading ability between those C average high school graduates who succeed in college and those who do not succeed.

Ho_3 There is no significant difference in measures of facility in the use of English mechanics between those C average high school graduates who succeed in college and those who do not succeed.

Ho_4 There is no significant difference in measures of academic motivation between those C average high school graduates who succeed in college and those who do not succeed.

SUMMARY

A population of 409 C average high school graduates who enrolled in Grand Rapids Junior College was studied. Regression analysis was used to determine the degree of relationships among academic ability, reading ability, facility in the use of English mechanics, and academic motivation and college achievement. Multiple regression analysis and discriminate function analysis were planned contingent upon finding statistically significant and predictively useful coefficients of correlation between the variables individually and the criterion variable. When no such relationships were found, the statistical analysis was terminated and depth interviews with a selected sample of the population were held.

CHAPTER IV

STATISTICAL ANALYSIS

The plan for the analysis of the statistical data was presented in Chapter III. In this chapter, the hypothesis will be presented operationally, the population will be defined, the statistical data will be analyzed by means of regression equations, and the hypotheses will be tested by this analysis.

OPERATIONAL HYPOTHESES

The specific problem of this study was presented in Chapter I and four hypotheses of the problem were posed. All four dealt with the relationships between test scores and the college achievement of C average high school graduates. Chapters II and III considered, respectively, the prediction of college achievement and such prediction from the test instruments used in this study. Thus, the problem of this study is centered upon the C average high school graduate and the prediction of his college achievement.

In other words, if the hypotheses stated in Chapter I are affirmed (that is, if the college achievement of these students correlates highly with the test variables), then expectancy tables for these students can be constructed which will be of value to all high school and college personnel who work with these students.

If these hypotheses are denied, either there is no meaningful relationship between the variables, or the instruments with which the variables are measured are defective, or the design of the study is faulty. Further research into this problem would, therefore, be indicated.

REFINING THE POPULATION

This study began with 412 students who were in the General Studies Curriculum and were enrolled in an orientation course called Psychology B. As was explained above, three of these dropped out of school during the third and fourth weeks of the semester while the test instruments were being administered. Thus 409 students were the population upon which the study is based. Eleven additional students dropped out of school after their test data was complete but before the deadline set by the college for dropping without penalty. Their records show, therefore, that they were enrolled: but they have received no credit and have been assigned no grades, either passing or failing. For the purpose of computing correlation coefficients and multiple regression coefficients, these eleven students were also eliminated from the study since no criterion variable (G.P.A.) was available for them; it was planned to leave them in the discriminant function analysis of this study.

ANALYSIS OF STATISTICAL DATA

The first step in the data analysis was to determine the number of students who, at the close of the study, were in each of the five academic status categories. An examination of Table 4.1 will show that more than 69% of the students studied continued in good standing at Grand Rapids Junior College after the study closed.

Another 15.16% of the population studied were allowed to continue on probation so that a total of 84.35% (83.6% of the males and 86.7% of the females) of the C average high school graduates continued on in college after one semester of college work.[1]

Table 4.1 - Academic Status at Close of Study

	Male	Female	Total
1. Continued in good standing	207	76	283
2. Continued on probation	53	9	62
3. Dropped before end of semester	13	2	15
4. Dropped at end of semester	5	3	8
5. Dismissed at end of semester	33	8	41
TOTAL	311	98	409

The next step in the data analysis was to determine whether the test scores of the C Average high school graduate predicted college academic achievement. Mean scores and standard deviations for the 398 students included in this part of the study are found in Table 4.2 of this chapter. Coefficients of correlation between eleven variables and the grade point average criterion are listed in Table 4.3.

[1] It is worth noting that the mean grade-point average was 1.82 with a range from .00 to 3.64 and a standard deviation of .72.

Table 4.2 - Selected Test Variables: Mean Scores and Standard Deviations

VARIABLE	N	MEAN	STANDARD DEVIATION
SCAT - Verbal	398	289.205	10.4528
SCAT - Performance	398	300.506	14.1746
SCAT - Total	398	294.474	11.1225
Cooperative English	398	46.061	8.2737
Cooperative Reading	398	50.599	6.7948
M-Scale Total	398	104.491	13.6452
GSCI	398	33.070	5.1223
PJCS	398	18.136	2.2673
WRL	398	32.215	8.4649
HTI	398	21.068	3.3432

Examination of these linear regression coefficients reveals positive, low correlations between the test scores and the grade point average criterion. Only five of the thirteen correlations are significantly reliable, two at the .01 level of confidence and three at the .05 level of confidence. The SCAT verbal score and the Cooperative English test had the highest positive correlation with grade point average, but these correlations were so low as not to have promise for the prediction of college achievement for these C average high school graduates.

Table 4.3 - Coefficients of Correlation: Grade Point Average and Selected Variables.

VARIABLE	COEFFICIENT	LEVEL OF SIGNIFICANCE[1]
SCAT - Verbal	+ .1669	.01
SCAT - Performance	+ .0138	none
SCAT - Total	+ .0445	none
Cooperative Reading	+ .0538[2]	none
Vocabulary	+ .0734	none
Speed of comprehension	+ .0434	none
Level of comprehension	+ .0447	none
Cooperative English	+ .1409	.01
M-Scales	+ .1276	.05
G.S.C.I.	+ .0808	none
P.J.C.S.	+ .0104	none
WRL	+ .1190	.05
HTI	+ .1178	.05

[1]Reliablility of correlation coefficients computed with 396 degrees of freedom from Table 25, p. 200, Statistics in Psychology and Education, H. E. Garrett.

[2]Obtained by converting three sub-test correlations to Z scores, obtaining mean Z score, and converting back to correlation coefficients.

To determine whether the ten per cent who achieved the highest and the ten per cent who achieved the lowest grade point

average in college would differ significantly from the total population, these two samples were treated separately.

A simple linear regression equation was computed for the forty-one whose college grade point average was the highest and the thirty-eight whose college grade point average was the lowest in the population of 398. Mean scores and standard deviations for these two groups are reported in Table IV along with those previously reported for the entire population.

Table 4.4 - Mean Scores and Standard Deviations: High Achieving Sample, Low Achieving Sample, Entire Population: Selected Test Variables.

	SCAT-V	SCAT-P	READ	ENG	GSCI	PJCS	WRL	HTI
				MEAN SCORES				
Hi(N=41)	293.63	299.85	51.97	48.65	34.26	18.58	35.60	21.46
All(N-398)	289.21	300.51	50.60	46.06	33.07	18.14	32.22	21.07
Lo(N-38)	286.89	299.23	50.00	43.23	33.02	18.28	32.15	20.94
				STANDARD DEVIATIONS				
Hi(N=41)	11.155	15.13	7.14	10.19	4.09	1.96	7.87	3.34
All(N=398)	10.453	14.75	6.28	8.27	5.12	2.27	8.46	3.34
Lo(N=38)	8.118	12.46	6.79	6.53	5.04	1.57	8.02	3.58

An inspection of this table reveals that mean scores seem to vary in the expected direction (that is students with highest grade point averages have the highest mean scores, students with lowest grade point averages have the lowest mean scores, and the entire

population falls between the two). This was true except in the SCAT—Performance mean score and the M-Scale-Preferred Job Characteristics Scale. However, this variation is in no instance great and in four instances negligible.

Table 4.5 - Coefficients of Correlations
High and Low Achieving Samples and Entire Population
Grade Point Average and Selected Variables

Variable	HIGH r.	Sig.[1]	ALL r.	Sig.[2]	LOW r.	Sig.[3]
SCAT-Verbal	+.2196	none	+.1669	.01	-.3324	none
SCAT-Perform	-.0734	none	+.0138	none	-.2358	none
Read	+.1762	none	+.0538[4]	none	-.3196	none
English	-.0096	none	+.1409	.01	+.1109	none
G.S.C.I.	+.0435	none	+.0808	none	+.1413	none
PJCS	-.1435	none	+.0104	none	-.0504	none
WRL	+.0285	none	+.1190	.05	-.0124	none
HTI	+.3200	.05	+.1178	.05	+.2971	none

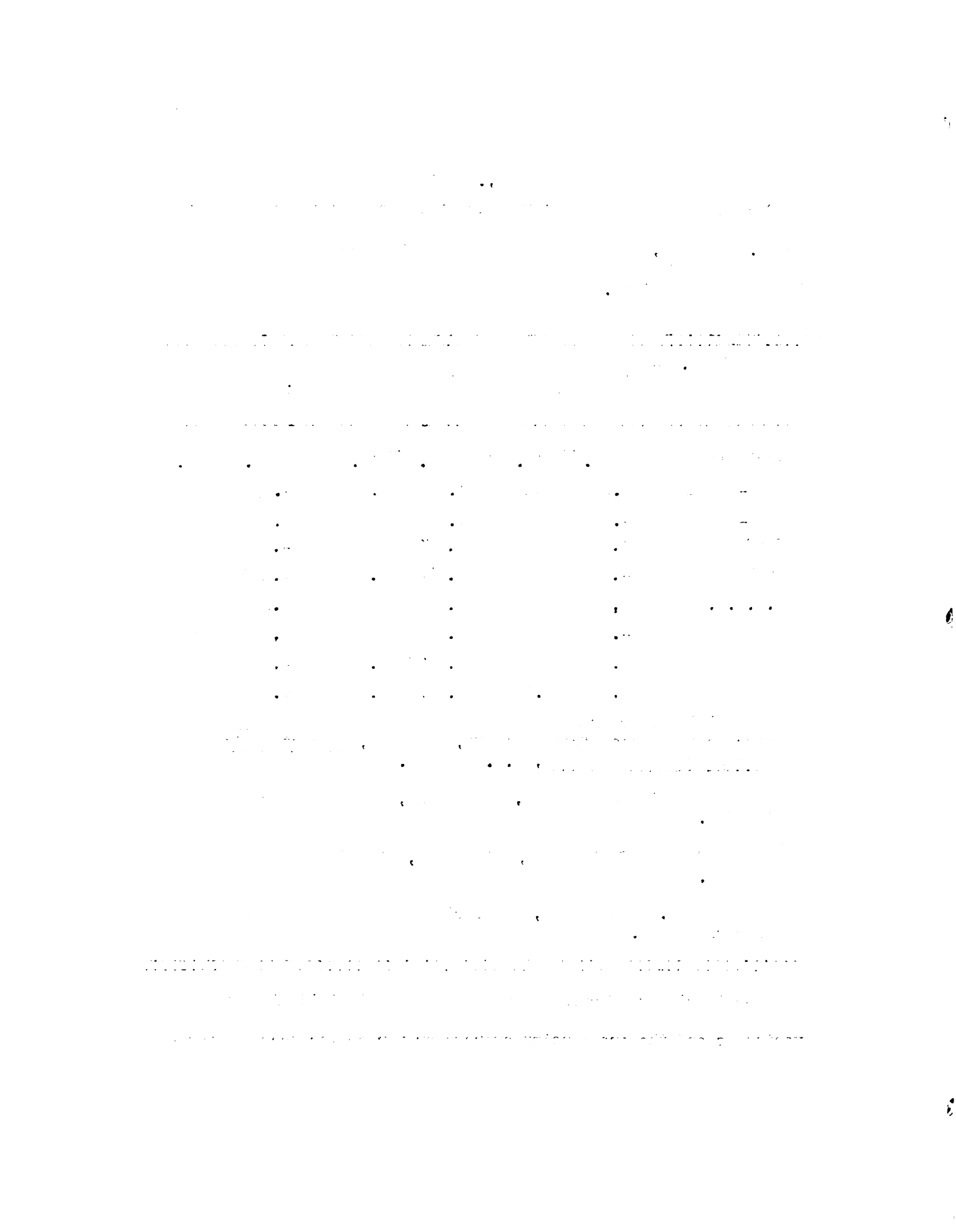
[1]Reliability of correlation coefficients computed with 39 degrees of freedom from Table 25, Page 200, Statistics in Psychology and Education, H.E. Garrett.

[2]Computed as in foot note 1, this table, with 396 degrees of freedom.

[3]Computed as in foot note 1, this table, with 36 degrees of freedom.

[4]See Table 4.3 footnote 2, for derivation of this coefficient of correlation.

Coefficients of correlation between the individual test variables and the grade point average criterion for these high and



low groups are presented in Table 4.5 along with the similar correlations for the entire group. These correlations do not show any consistant, large relationship between grade point average and the psychometric measures.

In summary, four hypotheses were tested, each of which was related to the problem of this study, and assessment of what a C average high school graduate was able to achieve at Grand Rapids Junior College. The first of these hypotheses stated in null form was:

> Ho_1 There is no significant difference in measures of academic ability between those C average high school graduates who succeed in college and those who do not succeed.

Academic ability was measured by the School College Ability Test. Although the correlation between the verbal section of this test and grade point average was significant at the 1% level, correlations of performance scores and total scores with grade point averages were not significant at either the 1% or 5% level of significance. However the first null hypothesis was rejected since a statistically significant relationship was found between success in college and a measure of academic ability - the SCAT Verbal score.

The second hypothesis was :

> Ho_2 There is no significant difference in measures of reading ability between those C average high school

graduates who succeed in college and those who do not succeed.

The Cooperative Reading Test with sub-scores in Vocabulary, Speed of Comprehension and Level of Comprehension, was used to measure reading ability. Significant correlations were not found between these test scores and the criterion variable, grade-point average. The hypothesis was accepted.

The third hypothesis, again in null form, was:

Ho_3 There is no significant difference in measures of facility in the use of English mechanics between those C average high school graduates who succeed in college and those who do not succeed.

The Cooperative English Test, Mechanics of Expression was used to test facility in the use of English. The correlation coefficient between the test variable and grade point average was significant at the .01 level and the null hypothesis was rejected.

The final hypothesis was:

Ho_4 There is no significant difference in measures of academic motivation between those C average high school graduates who succeed in college and those who do not succeed.

The Michigan State M-Scales were used to quantify the motivation variable and no correlation significant at the .01 level was found. However, coefficients statistically significant at the .05 level were found between M-Scales - WRL, M-Scales - HTI, M-Scales - Total and grade - point average; and the null hypothesis

was rejected.

In summary, three of the null hypotheses were rejected since statistically significant relationships were found; but in each of these instances, the relationships were so small as to offer little help for predictive purposes. Therefore, further statistical analysis (multiple regression and discriminant function analysis) was determined to be impractical and the statistical analysis was terminated.

CHAPTER V

THE INTERVIEWS

Since the psychometric instruments used in this study did not prove useful in predicting the college achievement of C average high school graduates, the question of what factors do operate to motivate these students to achieve at different academic levels in college was raised.

Other researchers seeking explanations for motivation and similar personality characteristics have faced this problem. Peck and Havinghurst (26) in their study of "Prairie City" youth were faced with this problem after they had gathered intelligence test scores, achievement test scores, and other data.

> ...in order to obtain information about motives, attitudes and other inner personality characteristics, more intensive study was required, using much more searching and time-consuming techniques.

The techniques they used for their studies were interviews, projective techniques, sociometrics, mental test, achievement records, questionnaires and ratings by adults. They concluded that

> In view of the large amount of time and effort spent in administering, scoring and analysing the above instruments it seems pertinent ot inquire into their value...While a question might be raised concerning the validity of our inferences from such sources as the projective and the interviews, and we do not have a completely independent criterion against which to test these inferences, yet the judgment of the clinical conference, after attempting to use all the various

> instruments and procedures described above, was that the projectives and interview contributed more, and in a more unequivocal fashion, than did the sociometrics; and far more than the questionnaires. (26)

In this study, interviews were held with a small sample of this population of 409 students to find motivational clues regarding these changes in academic behavior. Nine males and two females comprised the interview sample; two of the males were among those who withdrew or were dropped from school. The sample was small and confined to those individuals who were most immediately available, since this aspect of the study was designed to explore clues of a more subjective nature than the psychometric data in the original design and might prove useful in carrying out a more extensive study at a later date.

The interviews were structured around the following areas:

(1) Self-concept. What, if any, changes in an individuals' concept of himself took place between high school and college?

(2) Adult Models. What adult models were present in high school and college? What adults pressed for studying in high school and college?

(3) Peer models. What changes in peer relationships, peer status, peer affiliations and peer role took place between high school and college? What age mates influenced the student to study in high school and college?

(4) Family Relationships. What changes in family roles and relationships took place between high school and college?

(5) College Importance. What relative importance does the student attach to his college activities?

(6) Perceived changes in academic motivation. What reason does the student perceive to be important in explaining his past and present academic performance?

SELF CONCEPT

In exploring one of the areas of the interviews, self-concept, it is worth noting the following quotations as revealing the meaning that C average high school grades had for these students:

> I mean, I don't care one way or another, I mean, I get along, no one pushed me to get higher grades and if I could get by with C's, I did it.

> Ah, ah, I never cared that much about studying... I could get C's, and B's without really trying and it didn't mean anything, the marks themselves.

> Getting average grades meant for me getting C's - that being an ordinary average grade...I was happy with them because I felt somehow I had gotten that far.

These comments give a much different meaning to the high school C grade than is usually given by college admission officers. This is not the picture of a student who pushed himself to the fullest extent and could only achieve two full grades below the brightest students. To these students, a C grade was acceptable - not a grade that indicated academic trouble ahead in college. They did not evaluate the C grades as did their teachers. Another student puts it this way:

> And, well, (getting C grades) never made much difference in our group...either. Actually, you don't want to do

> any better than the group - you feel part of the group as long as you are doing the same as the group. I found this to be true, anyway...It didn't make any difference what grades you were getting. I was satisfied. I come home, and it didn't make much difference.

To peers, to parents - to these important people, the C grades were an acceptable standard of high school effort. No failure here; no hint of impending trouble in college - if college is considered. The C grade is a respectable, dynamically meaningful evaluation to these students. They saw themselves as working students, achieving at a satisfactory level.

However, some of these students became aware that their standards for achievement did not coincide with other's standards:

> ...in my ninth and tenth grade years I just didn't care...I was more concerned with material things, having fun... Some of the fellows in my own neighborhood... had their own ideas of fun...And I thought that was a good thing, a big thing...Then I realized that average grades to me were ultimate failure...I want people to know who I am, and average grades wouldn't make that. I want to be recognized by my teachers, and average grades won't make that. I want to be recognized as having ability, and average grades won't do that... Learning is easy for me...not in the sense I don't have to study, I really have to work at it, but if I apply my self to it, there's no problem. I can learn it...My, ah, sophomore year I failed algebra. Took it again next semester, and I received either an A or a B. It doesn't make much sense...So I think in the end, I mean, it was just the thought of failure.

This student perceived failure according to a new set of values which had now become more meaningful than the old idea of C

grades as acceptable, meaningful grades. He changed accordingly.

Another student made this same change, but only after he'd come to college.

> You know, I wish I would have studied in High School... To this day none of (my) group knows that I (had C high school grades)...Lets see, my friends Kelly and John have got married and they still don't know (I) was a C student...Then, Christine - I always considered her real sharp. And as far as she knows, I graduated from High School with A's. I think it would ruin my morale if she ever knew I was a C student...Well, I was able to get good grades...up here, (at Junior College) and I had good...papers I handed in - all A and B papers... the ones that...the gang has seen. As far as they know, I've gotten all A's and B's up here. This has probably made the difference in my grades because I needed those grades...as part of the group...In order to maintain your part...you weren't average because the group wasn't average.

The self-concept of this student changed from on which made C grades acceptable in high school to one which pushed him to greater achievement in college. The student changed his evaluation of what was acceptable to him, and he lived up to his new levels of expectation by getting better than C grades in college.

The self concept of a student, how he feels he can and should achieve, seemed to play an important part in the college achievement of these students.

ADULT MODELS

Adults have meaning for students. They serve as models after which students structure their actions. The role that adults play in the achievement of the C average high school

student in college was explored in the interview.

One college student had not achieved at a level in keeping with her own expectations; and she considered withdrawing from college. The expectation of a meaningful adult, her father, made the difference between withdrawing and continuing.

> I remember after the first semester, when I had that really bad time, I was going to quit. In fact I was going to quit entirely...But one day, (my father) just put it to me..."Well, when are you going to register?" And I said "Tomorrow", and I ran down to school and I registered. But (pause) I don't know (pause) you just want to do things for him. (Pause) I mean, I do.

One conversation, showing interest and expectation, is perceived by the student to be the difference between continuing in college and not continuing.

Another student pointed out the meaning to him of his father's caring about the son's college grades.

> and my father likes the response (?) of having a son that is going to college...I don't want to come home with a C or something. My father says, "You sure you can get into law school with that C on your report?" That kind of bugged me. That first semester, two A's, two B's and two C's, and he says, "What do you think you're going to do with those C's?" I can just see what effect I'm going to give when I get a C, so there is a tendency not to get it.

This student reported "a tendency not to get" poor grades when his father gound them unacceptable.

Not all adult pressure for grades takes the same form. For example, another student tells of his father's <u>lack</u> of

expectations for him and its effect:

> Because of my grades in High School (my father) tried to get me to go into an electronics technician's course (a two year, terminal program)...Between high school and college there (is supposed to be a) sort of a let-down, and he figured that I would never be able to get through college...That's why he wanted me to take a two year course, so that I would have something - ah - college training...I didn't want to do that because I felt that I was able to do better. (So) I started out in engineering and I butted up against a wall that I felt I couldn't climb. Therefore I switched out of that and at present I an in Business Administration...I feel I like the courses that I'm taking...and I'm interested in business and that type of thing.

The achievement in the new curriculum confirmed this student's evaluation of his own ability but the reaction from his father was not exactly what might have been expected:

> When I received my grades at home, I had all B's and (my father) looked at this with somewhat the same amount of disgust that he did when I had all C's...in high school.

The father's concern with achievement was evident although better achievement did not seem to allay the concern. This student's mother may have given encouragement in some subtle ways, although it is hard to evaluate:

> My mother never says (anything)...She thinks its real nice that I'm getting good grades, and she gives - ah - help that way. She is encouraging, but she doesn't say a whole lot.

Here, again, was parental concern for grades, subtle on the part of the mother, unsatisfied on the part of the father.

Another student reported the pride his parents took in

his accomplishments:

> My mother and father...always let me know how proud they were. I mean that it's not that they would go real overboard...They don't get on my back and make me study. They figure it's up to me to do it; but they always let me know they appreciate...and are real proud of what I'm doing...And my neighbors - they seem to have an interest. They, you know, have something, (my success in college).

Parents were not the only meaningful adults for these students. Teachers, a high school principal and neighbors were sometimes cited by the students as meaningful to their motivation.

> One time my principal called me in and chewed my ears in language I never thought I'd hear from a man like him...I think every student probably gets a sermon sooner or later - that you are an A student... and why are you doing D work...And as a result, for some reason, that gave me the will to learn, the will to work.

This same student goes on to mention his neighbors:

> And my neighbors - they seem to have an interest. They always, you know, have something to say about (my success in college).

These students give much credit to adults for such changes as occur in achievement patterns from high school to college.

PEER INFLUENCE

Another strong influence in the lives of students has been that of their peers. The interviews explored the meaning that peers had for the college achievement of C average high school graduates. That student whose father was dissatisfied with

his son's B average in college indicated an area where he and other of the C average high school graduates felt there was motivation for improvement in college.

> In college, the main influence I feel has been my girl friend, in that she has given me encouragement... She doesn't make me feel if I get a B or a C that this is wrong...She feels that that's an achievement too, better than nothing. And this has been a great deal of encouragement for me.

This same push to greater achievement from peer expectations was found in another interview:

> To complicate it, there's this girl I went with last year...I've never told her...I started out (as a C student)...I didn't think I was going to get serious over her, in the first place, but I did. And I still think I love her, but it would kind of ruin my morale and my ego if I told her I came from (a C average high school background)...I thought if I did get married - well - if she found out that I wasn't exactly all I pretended to be, it would kind of demoralize me.

The conflict between his high school grades (which he called "acceptable:) and his desire for higher college grades was clearly perceived. The desire to hide his low high school achievement from his peers (especially his girl friend) caused considerable anxiety - a threat to his "morale and...ego."

Peer group influence was not limited to those to whom a student was romantically attracted. The influence of close friends in both high school and college was also mentioned.

> I didn't really have what you'd call a group of friends (in high school). I mean, I lunched with

> them. I talked with them, etc. But as soon as school was out and the 3:30 bell rang, off to home (I) went. I mean, ah, they didn't interest me...

Note the influence of a group of college friends:

> I don't have a gang of friends here at J.C.; er, gang is the wrong word, but not actually a group, just a few; there's this one friend, Johnny, we've been friends since we were kids, and Vanda R---, mostly kids from our church...Ah, actually, my very best friend is a darling little Italian girl, Tina L---, and she goes to Aquinas College...She got 3 A's and 2 B's.

Her close college group elevated her academic standards. How different this is from her high school experience, where, in her perception, no group was present to impose any academic expectations.

This same change from high school group expectation to college group expectations is mentioned by another student:

> My first...years (in high school) I never identified myself with anything that looked like an egg-head. Or for that matter (I never identified myself) with the group that knew how to have fun...As i said before, I was associated with a little gang that had their own ideas of fun...Their idea of fun is different from the average teen agers, I guess. I mean, they go out, and to be perfectly frank, just raise hell... And I thought that was a good thing, a big thing...

Then he told of his group identification in college:

> Here at school...I'm between two groups, you know, like the devil and the deep blue sea. Some of these kids, I mean they're not real bad students, but they are fun lovers, you know. They are great kids, really. But when it comes to school and all, I'll say "Hi" to them, and maybe we'll smoke a cigarette at the counter,

> or something, but I allow myself fifteen minutes ... I can sit and shoot the bull with them...but after that I turn it off...Then if I'm studying English there will be a table where these kids are in my class and they are known as a bunch of egg-heads...I like to identify myself with the egg-heads, so I'll sit with them...I hate to keep on saying egg-heads, because that makes, you know, me feel funny; but now as far as my role goes with them, I think I'm accepted.

Another student interviewed showed a similar change in group affiliation:

> I hardly ever see any of (my high school group). One of my boy friends that was the closest is married now and I hardly ever see him...The whole group was a close knit group, and we had known each other for years...Well, as part of my group, I would say their (sic) whole attitude (was acceptance of C grades)... (My college group) is quite a large group. They take up one of these whole sections of tables. One I got in...I liked to play the part of the leader... and none of this group ever knew that I (earned C grades in high school). This has probably made a difference in my grades because I needed those grades and (they are) part of the group response.

Peer expectations were often mentioned as a positive force for higher achievement in those who do achieve in college above their C average high school grades.

FAMILY RELATIONS

J. A. Kahl studied the educational and occupational aspirations of middle class boys (22). He discovered a subtle irritation and dissatisfaction in parents concerning their class status. This, he felt, was critical in whether these boys attended college or not. Berdie (2) discovered that proximity to a college and press for further education

by the mother were the critical factors in college attendance for a group of Minnesota youth. The interviews in this study investigated both the high school and college family situations of the people interviewed.

One student talked of the importance his family felt:

> My father kind of likes the response of having a son going to college; and I think my folk's response has been (ah) very good in making me feel that (ah) I am an important member of the family - you know, what I am doing was important, and what I shall become is important to them, and (pause) what they do - what they do for me and what they might be able to sacrifice for me - this is all important because they want me to go to college.

Another student referred to her relationships with her father (her mother had been dead for several years) as a corporation with her own concept of corporate responsibility:

> For example, my father doesn't say no, exactly; but you know he means no...And I don't know (pause) after you live with a person for so many years, you kind of know what he means...He's never scolded me; oh, a couple of times, maybe. Every child must be scolded...But like right now, there are just the two of us and I - I mean - you don't say no to Ed, you just don't do that. You work as a corporation. He expects me to go to school because he couldn't; so I go.

The pride his family takes in identifying with a college student son is mentioned by another student:

> My mother and father - ah - they have always let me know hos proud they were. I mean, it is not that they would go real overboard you know, and every time I would come home they would say, "Well, how did you do today?" and things like that.

> I mean, they don't really put it on...they don't get on my back and make me study...They figure it is up to me to do it...But they always let me know that they approve (of) it; and they are real proud (of what I'm doing); I think that is probably the most important thing.

It is not always parents whose expectations are the important ones in going to college. One girl talks of the expectations of her sister and brother-in-law:

> Both of my sisters attended (Grand Rapids) Junior college but my sister, Loretta, (pause) well she is a pianist - and she got a scholarship to Western but got married, (pause) and my other sister, she didn't like school at all so she quit...Well, her husband is a PH. D. in English; and he teached at Texas University; and, well, she sort of pushes me, you know; and she wants me to attend; and she is happy because she thinks that I will be the only person in our family who will actually get a college degree...I hope so.

The family of a student was also found to be important for motivation to college achievement.

COLLEGE IMPORTANCE

Douvan and Kay (10) point out that, to some young people, college represents the "golden path to social mobility." Other researchers have found an increasing attention to, and emphasis on, the academic part of college life. To explore these issues, the students interviewed in this study were asked to discuss the most important thing they were doing in college.

One student felt it necessary to lay careful background for his answer:

> I feel that I have a place in this world; and I am not sure what it or where it is, but I feel that I must find this place...I don't feel the work I am doing (outside of school) I would miss if I stopped absolutely. I don't feel that I couldn't get along without it. But I do feel that school is important...and the only reason that I am continuing in school...is to find this place that I have.

The "place in the world" is not further defined. Whether it was a social place, a vocational place or a combination thereof was not clear. However, college was the way to find this place.

A girl made it most clear that she was in college better to prepare herself for employment:

> Now then, I would say college is the most important thing I am doind really. The reason I am going to college is to prepare myself for a job. Through a job you earn money so that you can live. So the most important thing I am doing is important for my future...(it) may be important at the present but (it is) important for my future.

Another of the interviewed expresses the same idea, although he feels his chance for college is the result of generations of effort:

> Right now, at this time, the most important thing I have is, (pause) I am going to say, school. I want to go to school but school is not the most important thing - school is the means to the end. You see it is my tool and that is why it is im - portant to me. The most important thing I am doing, (pause) this important thing is finding my role in life and not staying where my father is. I love my father. He is a good man; he has a good mind; he never graduated from high school. He wanted to go to school but with the family he had he just

> couldn't. I am from a family of factory workers way back, but they are giving me a chance. They have all worked this long and worked hard. How through the generations they have produced and produced until maybe they will finally come out with somebody that won't work in a factory. This is the important thing I am doing...and if I don't get all the way to the top, my son will, or his son.

Whether for social reasons, vocational reasons, or any other, these students agree that college is their most important activity. To some it may be a way to something greater, but it is the most important activity in which they're engaged.

STUDENT PERCEPTION

The student's perception of the most important reason for his success or failure in college was sought in each interview. When asked for thie perception, each student gave an answer only for himself. A pattern, however, seemed to emerge.

One girl gave this reply:

> Well, I like people and I like to find out more about them...and (I have) interest, really interest, in people and interest in teachers. For example, I have Mr. _____ for English. I just love him, really. I love his class. He has very interesting lectures and you just are alert all the time and really it is quite amazing...and that is the reason I think I am succeeding.

A personally rewarding relationship with a teacher, perhaps multiplied in other classes, was the basic factor she felt important.

Another student cited his changed perceptions:

> There are so many reasons but if it comes down to one it is because I wanted to...because I don't want to let anyone down. This is it...I found that God gave me something that he didn't give the guy that sleeps in the alley way; or maybe he did give it to him but the guy didn't use it, so I am not going to waste my chance. I am going to use what I have. I have never felt that way before...In high school it didn't bother me...I came to school my freshman year here and I had to start making a place for myself, making my folks a bit more proud of me than they were... and that is how I changed. The important thing is I get the more schooling...because I see the world different.

A young man found reason to use the ability he had and he explained it this way:

> At the middle of the first semester I was ready to quit at any time...and not go on to college any more...But, I feel now that I have found a place; and I feel that this adjustment course helped me to find it. And between that course and my girl friend, I found I wasn't just stupid, that there was something there, and that it wasn't that I didn't have college ability but that I didn't have reason to use it...Now that I have found this reason I feel I will be able to succeed in whatever I try... I feel that I can succeed because I have a reason to succeed which I didn't have previously.

In another interview, the student talked of greater maturity and accompanying realizations of the importance of college work:

> Maybe it is my change in attitude...I wanted to beat the kids that had gone to college - not to be superior to them but just to beat them by succeeding...The fact is that after I had (grown) up a little bit more I realizes about job opportunities, and now I think the main, important thing to me is what I should do in the future, and I could

> never of had that if I was a student like I was in high school. It is kind of being motivated to succeed the way others have.

Each of these students has given a personal answer, but all of them were saying that they had found college to be a developing, maturing experience that enabled them to view their academic work from a different perspective than they did high school work and that, as one student put it, "spurred them" on to good achievement.

SUMMARY

When the psychometric instruments used in the study did not show strength in predicting success in college, interviews with a small selected sample of the population were held to explore clues to factors important in the motivation in college of C average high school graduates, factors which could be explored in future research.

Each of the students interviewed reflected a unique pattern of motivational factors which influenced college achievement. Some attached little importance to certain of the factors explored. Three rejected adult expectations as important to their achievement. Two denied any importance of their family roles and expectations to their achievement. However, a pattern of factors important to achievement was found. Seven of the eleven students interviewed reported a change in their

self-concept as an important factor in their achievement. Four of them believed that adult and peer expectations were important factors. Five reported that college itself, with its activities, its stimulation, its association with other students, and its opportunities were important factors in their college success.

The most common syndrome of forces producing greater academic change in college was a chang in self-concept accompanied by, or perhaps inspired by, adult and/or peer expectations of greater achievement plus the activities, opportunities and associations of the first few months of college.

CHAPTER VI

FINDINGS AND RECOMMENDATIONS

The general purpose of this study was to consider the college achievement of C average high school graduates. More specifically, four types of psychometric instruments were used to ascertain whether scores from these tests could contribute to the prediction of academic achievement for these students.

Test scores from the School College Ability Test, the Cooperative Reading, the Cooperative English-Mechanics of Expression Test and the M-Scales were obtained for 398 C average high school graduates who entered Grand Rapids Junior College in September, 1961. Grade-point averages for these same students were also obtained. From these data, coefficients of correlations were computed for each of the test variables with the grade point average.

Correlations of Grade-Point Averages with SCAT-Verbal and Cooperative English were significantly different from zero at the .01 level while those of Grade-Point Average with M-Scales: Total, WRL and HTI were significant at the .05 level. Other correlations did not prove significant. However, even those which were statistically different from zero were so low (.1178 to .1669) as to offer little help in predicting academic achievement. Consequently although three of the four null hypotheses were rejected, the statistical analysis was terminated.

When the psychometric instruments did not predict the college academic achievement of C average high school graduates, it was decided to interview students in depth to try to discover clues to causes for changes in college achievement patterns among these

students. Interviews were held with a small selected sample of the population to discover what social and emotional factors might be important to motivate C average high school graduates to successful college achievement. Each of these interviews indicated dynamic forces and events in the lives of those interviewed that made the change from high school achievement to college achievement understandable.

FINDINGS

Analysis of the statistical data obtained from this study shows the following findings:

1. Psychometric data from The School College Ability Test-Verbal Score and an English language facility test correlated with the college grade point average of C average high school students at the .01 level of significance but coefficients were so low (.1409 and .1669) as to offer little help in the prediction of college success of these students.

2. Correlations between grade-point average and the M-Scales total, WRL and HTI were significant at the .05 level. However, these correlations from .1178 to .1276, offered little help in predicting college success of C average high school graduates.

3. Coefficients of correlation for School College Ability Test - Performance Score and Total Score, a reading test, and the M-Scales - GSCI and PJCS with the college grade point average of C average high school students were not significant at the .05 level.

CONCLUSIONS

Since this study was exploratory in nature, some of the findings warrant further discussion.

Homogeneous Group. It was found that widely used ability tests did not help explain college academic performance for the studies studied. One question raised in connection with this finding is the effect of the homogeneous population on the predictive ability of the psychometric instruments. If these instruments seek to establish a linear relationship between performance on the test and scholastic achievement, their use with a group which is relatively homogeneous on achievement might be limited. Holland (20) used the College Entrance Examination Board's "Scholastic Aptitude Test" on a homogeneous group - National Merit Scholarship Winners. He reported generally low predictive correlations of .17 and below. Clark (6) used the same instrument on a relatively homogeneous group of southern Negro students and found that college grades did not correlate well with their test scores.

The failure of the college grades of the students in this study to correlate with their test scores adds evidence to a hypothesis that psychometric measures will not effectively discriminate among members of a relatively homogeneous group.

Intellective plus Non-Intellective. This inability of the psychometric instruments to predict college achievement has another facet meriting consideration. Fishman (15) hypothesized that combining intellective (aptitude test scores, achievement test scores

and course marks) with non-intellective (personality, motivational and attitudinal measures) characteristics does not increase predictions of college success. He further hypothesized that these predictions are not increased because behavorial and environmental changes in college students rendered non-intellective measures useless. The low correlations between GPA and M-Scales scores lend support to Fishman's hypothesis regarding failure to aid predictive efficiency by adding non-intellective factors to the predictions. The interview material of this study revealed behavioral and environmental changes in the college students similar to those Fishman hypothesized render such non-intellective measures useless.

Inappropriate Instruments for College Students. One further study, by Jastrab (21), merits attention here. He reported that certain selective devices built into the items on the M-Scales made them inappropriate for use with college students. Thus their lack of predictive validity in this study may be due to these selective devices.

In summary, these tests do not predict the college achievement of this population because of 1) the homogeniety of the group, 2) the combining of intellective with non-intellective factors in predicting achievement, and 3) selective devices built into the M-Scales making them inappropriate for college students.

Success in College. A fourth area of the findings of this study which warrants further discussion is that a large majority of C average high school students did make better grades in college.

Three hundred and forty-five of the students in this study (34% of the total) were allowed to continue in school after the closing date of the study; and 233 (69% of the total) were allowed to continue without scholastic probation. In a similar vein, Coleman (7) reported on two experimental groups of 72 students each which were admitted to Columbia College even though their SCAT-Verbal test scores were lower than those Columbia normally accepted for admission to the freshman class. In both of these experimental groups, there were fewer failures in the English and Social Science areas than among those members of the freshman class who were regularly admitted. In one of the groups of 72, 47% were in the upper three quarters of the freshman class. Chellevold (5) reported from Wartburg College that when a few marginal students who did not meet regular entrance requirements were admitted, instructors found them able to make satisfactory progress with few qualifications.

This evidence suggests that many high school graduates, who under present admission standards might not be admitted to colleges, can achieve academic success if they are admitted. It may also serve to emphasize that the use of group data for the prediction of indicidual performance is complicated by the extraneous or non-intellective factors which tend to cancel out in groups but which do not do so when individuals within the groups are considered.

Motivation of C Average Graduates. Interview data from this study revealed clues to the motivation to academic success in college of the students studied. 1) Payne (25) hypothesized that

self-concept may be an intervening variable between motivation and achievement. His hypothesis is supported by the interview data in this study. An individual's self-concept, how he feels he can and should achieve, was important to the level of his college achievement.

2) Peer-group and family-group expectations and relationships were found to be important to the college achievement of those C-average high school graduates who were interviewed. The level of achievement expected by people important to the student such as parents, close friends, and fiancee, was important to the success of this student.

3) The C average high school graduates indicate that those events they see as important to their success in college are largely events which took place while they were enrolled in college. This recency fact indicates the importance to college success of college orientation, early counseling, social programs, friendships and student personnel programs.

RECOMMENDATIONS

Certain recommendations seem appropriate as a result of this study:

1. Replication of this study on other groups of C average high school graduates enrolled in other types of colleges is indicated.
2. The differentiating power of psychometric instruments designed to measure academic ability and used on homogeneous groups warrants further investigation.
3. A courageous attack is needed on a more accurate

and valid use of group data when attempting to predict the performance of individuals within the group.

4. The interview procedure with a larger sample of C average high school graduates should be replicated to investigate the place of self-concept in the motivation-to-achievement process.

5. Replication of the interviews with a larger number of students to investigate the place of peer and family group expectations and relationships in the motivation of these students is needed.

6. Replication of the interviews with a larger number of students is needed to investigate the hypothesis that the important events in the student's lives which motivate to higher college academic achievement take place after college enrollment.

7. The interview procedure with a larger sample of C average high school graduates who fail in college should be replicated to contrast with the successful student.

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APPENDIX A

Interview Outline.

Interview Outline-1

Grand Rapids Junior College Marginal Student Study

I. Identifying Data
   A. Name_____
   B. Student Number_____
   C. G.P.A.
      freshman year_____
      at present time_____
   D. High School Attended_____

II. Objective Data
   A. Sibling Order_____
   B. English Grades
      High School_____
      College_____
   C. Automobile Ownership
      High School_____
      College_____
      funds for operation_____
   D. Financial Status:

	allowance	savings	earnings	other
freshman year				
at present time				

III. Subjective Date (recorded responses)
   A. What did getting average grades in High School mean to you?

   B. What single part of your activity today is most important to you?
      If every activity but one had to be dropped, what would you keep?

   C. What role do you play in your own group of friends?
      Has this group changed since you came to college?
      Has this role changed since you came to college?

   D. What person has been most interested in your succeeding in college?
      (If not family) How does your family feel about it?
      Does your family pressure you? Who?

   E. What role do you play in your family structure?
      How is this family structure changing? (mobility)

   F. What reason would you give for your success (failure) in college?