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A STATISTICAL DESCRIPTION OF FACTORS RELATED
TO DROP-OUTS AND NON-DROP-OUTS AT
NORTHWESTERN STATE COLLEGE

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CHAPTER I

INTRODUCTION

College administrative officials often lack the concrete evidence necessary to demonstrate whether their particular institution has done everything within its power to assure the successful completion of a course of study by its students.

To obtain such evidence, each college must make a scientific and comprehensive study of the factors which determine its ability to "hold" its students in college until they graduate. Such research may aid in revealing the weaknesses of an institution and should provide administrative officials with reliable and valid information which may serve as a basis for making desirable and defensible changes. It is only when these factors are carefully reviewed and the necessary data secured and interpreted that a college can determine the advisability for making modifications in its program.

That this problem warrants much attention may be seen by examining the results of a survey of conditions and practices in two hundred seventy-six colleges and universities which was completed in 1948 by Archibald MacIntosh (9). Findings indicated that the over-all average loss of students from these schools approached the fifty per cent mark. In small coeducational colleges of less than one thousand enrollment, 55.7 per cent of the students left school before completion of their programs.

Concern for the "drop-out" problem takes on greater significance when it is found that by 1960, according to a conservative estimate by Carmichael (3), there will be a total of 3,000,000 students enrolled in the colleges and universities of this country. Unless adequate steps are taken to study and improve the holding power of these institutions, the resulting waste of time, effort, and expense on the part of the students who drop out, and, on the part of the institutions as well, will be tremendous. This does not mean to imply that the schooling received by those who withdraw from college before graduation is not of some value, but the opinion is held that the majority of students originally enter college with the expressed hope of eventually receiving a degree.

It is believed that the solving of this problem has not been attempted by many institutions. Such a point of view is borne out by Feder, Boss, Schipman, Wells, and

Williams (6, p. 1298) when the following observation is made:

The failure on the part of most colleges and universities to study clinically the causes of student mortality has denied to administrative officers and faculties valuable information in the area of serving constituent needs. For the most part there has been a laissez-faire attitude on the part of college officials, implying that if students did not or could not continue in school it was not the concern of the institution.

Related Research

The problem occasioned by the withdrawing student has been considered from a number of approaches. In earlier years, many of the studies were concerned primarily with scholastic failures, especially among freshmen students. Attempts were made to predict whether a student would be successful in college or withdraw on the basis of his high school record of achievement or of the scores made on his college entrance tests.

An example of such research is the one made by Jordan (22) concerning 562 students who entered the University of North Carolina in 1922. He found that those who graduated from college had a scholastic average of one grade point higher than those who had withdrawn. The withdrawing group scored ten points lower on the Otis test than did those who graduated, and as a group, were inferior in scholarship to those who remained.

Rogers (31), in her analysis based on data relating to the 1919-23 class in Goucher College, concluded that students with lower scores on the intelligence examination given

by the college tended to withdraw from college sooner than those who obtained the higher scores.

The results of these two earlier studies were verified a few years later in 1930 when Eurich (18) examined 4082 students in the College of Science, Literature, and the Arts, and 1314 students in the College of Education at the University of Minnesota. His conclusions revealed a general tendency for failing students to rank lower than average on both the college ability test and college aptitude rating.

Keller and Summers (42), working jointly with the Office of Admissions and Records at the University of Minnesota, made a survey of 601 students who had taken at least one full quarter of work during 1946-47, but had failed to return during the succeeding quarters of 1947-48. Their results indicated the typical drop-out came from the lower ability bracket in the total college population, and placed at the 48th percentile on the American Council of Education Psychological Examination and at the 35th percentile on the Cooperative English Test. These scores were significantly below the median for entering freshmen.

Other investigations concerning students who drop out of college have used one or a combination of the following approaches: reasons given by students when they withdrew were examined; studies were made of official records which gave the college's reasons for the withdrawal; various comparisons were made between withdrawing students and those

who remained; and in recent years, a considerable number of studies have been of the questionnaire variety in which the withdrawing student is contacted and asked to give his reasons for leaving college.

Smith's (32) research conducted at the University of Wisconsin concerning 6559 undergraduate students, 2825 of whom were in attendance in 1919-20, but did not return for the first semester of 1920-21, revealed that a much larger percentage of women dropped out during the freshmen and sophomore years than was true of men. An additional finding was that a higher percentage of mortality came from students whose homes were outside of the state.

Portions of Smith's (32) results are in disagreement with those of Long and Perry (24) who concluded from their investigation of the fully matriculated day students who entered City College of New York in September, 1946, that there was a tendency for mortality to be greater among men students than among women students.

Low achievement was reported by Moon (27) as being an important factor in the cases of 112 students included in a group of 278 students who withdrew from the University of Chicago during the year 1925-26. Fifty-two of these cases were dismissed because of unsatisfactory work, while the remaining sixty had withdrawn while on probation for low grades.

In her survey of 629 freshmen women entering six

colleges in 1925, Pope (11) inferred that intelligence tests produced significant differences in favor of the graduates as compared to the withdrawal groups. The age of students at the time of entrance into college resulted in a greater number of withdrawals among the older group. Another finding concerning the distance from home revealed that the ratio of those who withdrew to those who were graduated increased when the range of distance increased to one hundred miles or more.

Odell's (28) observations based on nearly 2000 freshmen students who attended the University of Illinois during the late 1920's, revealed that those entering college when one or two years below normal age maintained higher marks and remained in college longer than those who entered at the normal or older age.

In the early 1930's, Walker (36) studied 3345 freshmen students at the University of Chicago to determine what relation existed between academic success and the housing in which they lived. Student housing, in this case, was classified into four types: private homes, rooming houses under private management, university residence halls, and chapter houses owned or controlled by fraternities.

A summary of these findings reveals that the men and women who lived in the university residence halls attended the largest number of quarters, completed the largest number of majors per quarter, made the highest average grades, and had the largest proportion who graduated.

In her survey of 437 students who entered West Virginia University as freshmen in 1935, Stalnaker (34) concluded that one would not be justified in stating that students with low intelligence scores would not be able to graduate from West Virginia University. Forty-four per cent of the students from the lower half of the class, so far as intelligence test scores were concerned, remained in college and graduated; and even in the lowest decile the chances were about three to seven that a student would graduate.

Williams' (38) investigation of 1026 students who had enrolled in the University of Michigan in the school year 1936-37 but failed to return in the fall of 1937, concluded that the factors of sex, age, and residence within or without the state apparently had little effect in determining if a student remained in or dropped from the university.

Possibly the largest research project relating to student mortality was undertaken during 1936-37 by John H. McNeeley (40), Specialist in Higher Education of the United States Office of Education. It was based on a cooperative enterprise in which twenty-five universities of various types and distributed throughout the United States were involved. An attempt was made to obtain a typical cross section of the students of each university. A possible limitation was that the smaller collegiate institutions were not adequately represented in the sampling.

Research for the project was based on the class of

students entering the universities as freshmen at the beginning of the academic year 1931-32 and involved a total number of 15,535 subjects. All findings were based on data secured from the official records of the institutions involved.

Results obtained by McNeeley (40) revealed that far greater percentages of the students making low academic marks left the universities than of those making high marks. Of those students whose index ranked them in the lowest decile group, 99.5 per cent left the universities as compared with 26.2 per cent who ranked in the highest decile.

Housing seemed to exert some influence with approximately three-fourths of the universities having more students drop out who lived at a rooming house or college dormitory than was true among those living at home with parents or at a fraternity or sorority house.

The factor of age at entrance was also found to have an influence on whether a student remained in or left college. Of those students who entered college at an age of less than seventeen, 47 per cent dropped out before graduation as compared with a 72 per cent drop-out of those who entered at age twenty years or more. An additional finding revealed that larger percentages of men dropped out than was true of the women, although there were marked institutional differences.

Snyder (33) examined the records of approximately 3000 men and women at Los Angeles City College who dropped out of school over a five-semester period during the late

1930's. The withdrawal group consistently showed inferior ability as measured by mental and reading tests. It was found that the mean score for the Thurstone Psychological Examination of the withdrawal group was 151.3, as compared with 164.9 for the total college group; this difference was found to be a significant one. No reliable differences were found in occupational level on the Barr-Taussig Scale between the parents of the students who withdrew and of the college group as a whole.

It was concluded by Snyder (33) that few generalizations could be made concerning the drop-out group, since the over-all profile of the 3000 students who left school differed little, except in academic ability, from those remaining in college. A significant difference was found, however, when the two groups were tested on the Iowa Silent Reading Examination with the mean for the withdrawal group being 126.1 as compared with 134.7 for the college as a whole.

Preston and Botel (29) investigated 2048 college students who entered the Wharton School of Finance and Commerce at the University of Pennsylvania from the fall of 1938 to the fall of 1945 inclusive. In comparing the reading achievement of the total groups with that of those students who dropped from college because of failing grades, it was found that the mean of the total group (188.2) was significantly higher than that of the failing group (182.6). A comparison of the college aptitude of the total group and the failing

group showed that the mean of the total group (469.1) was significantly higher than the mean of the failing group (418.6).

Henry (8) reported that fourteen studies were published between 1923 and 1939 concerning the relationship between the socio-economic level of occupation of the father and their children's success in college. In six cases it was found that children of the fathers belonging to the professional groups did better in college than did children of fathers who belonged in those occupations that are usually rated on the lower scales of socio-economic classifications. However, in an equal number of the projects it was found that there was no relationship between the two factors, and the remaining two studies indicated results in the opposite direction.

A number of other research investigations have been made relating to student mortality. However, since many of these were designed primarily to secure the sentiment of the drop-out group as to reasons for leaving college, and, since no comparison was made of those who left school with those remaining, no attempt was made to include such information in the present document.

Summary

Although the findings concerning reasons for "dropping out" vary from one institution to another, a summation of the different studies reveals a number of distinct differences:

between the drop-out and non-drop-out groups.

It was consistently found that the non-drop-outs achieved more, had higher scores on intelligence tests, and entered school at an earlier age than did the drop-out group. The drop-out rate was usually higher among men than among women, although this result varied widely from school to school. It was found, however, that the mortality of veteran students was usually lower than that of the non-veteran group. Additional conclusions revealed that the non-drop-out group frequently had higher English and reading scores on entrance tests than did the drop-out group.

No generalization may be reached concerning the housing in which college students lived since there were marked institutional differences relating to this factor. However, the distance a student lived from the college he attended seemed to be a determining factor in some cases, although one would not be justified in saying that there is more chance for an individual dropping out of school if he lived at a greater distance from the school.

The parental occupation of students showed such variability in the research studies examined that no consensus could be established. There appears to be a scarcity of published research relating to course load and marital status of the two groups. Additional research seems to be needed in these areas.

CHAPTER II

METHOD

Introduction

Research dealing with the problem of student mortality in colleges and universities has yielded unique information concerning the characteristics of the student who leaves college, the circumstances related to his reasons for leaving, and the effects upon both the student and the school. However, the results of these investigations, important as they are, cannot be generally used by individual institutions as a basis for considering possible changes in their individual programs. The factors which determine the holding power of an institution vary greatly from college to college. Socio-economic conditions, the location of other colleges, the geographical location of each school, and many other factors combine to make it necessary that each school study its own students if usable information is to be secured.

Determining Need for Study

Northwestern State College, Alva, Oklahoma, is a four-year state college serving the twelve northwestern counties of the state. Although it is classified as an education and

liberal arts institution, its primary function is to prepare teachers for the elementary and secondary schools.

Although no study of drop-outs has ever been made of the College, this fact in itself was not considered as necessarily pointing out the need for one. A preliminary survey was made to determine the percentage of students withdrawing from Northwestern during a three-semester period following their initial enrollment, and not returning before the end of that period. Only those freshmen students were included who had enrolled at the College for the first time in September of the years 1950-54, and who had not attended college elsewhere. Six hundred forty students met the requirements given above, and of these, 286, or 44.7 per cent left the college and did not return within the specified time. If all eight semesters of a normal college undergraduate program had been included, undoubtedly the actual percentage of loss would have revealed an embarrassingly large figure. With this great loss of students, the need for a comprehensive study of the factors which may be contributing to this high rate of student mortality becomes more apparent.

Statement of Problem

The problem to be considered in the present study is how can the potential "drop-out" student at Northwestern State College be identified. It shall thus be the purpose of this study to analyze selected factors relating both to

drop-out and non-drop-out students in an attempt to find a solution to the above stated problem. The null hypothesis to be tested is that no significant differences exist between the two groups in relation to the factors to be examined.

Selection of Critical Factors

After the need for a drop-out study of the College was established, the problem area centered around the identification of those elements which caused students either to remain in or to leave the College. Feder (6), and others point out in Monroe's Encyclopedia of Educational Research that possible factors to be considered include age at entrance, level of intelligence, socio-economic status of parents, distance from home, health, living quarters, original purpose in coming to college, and extent of participation in extracurricular activities.

The writer studied all of the official records in the College to determine if adequate data were available to carry out a satisfactory study of the type contemplated. When a positive answer was reached, the following twelve critical factors were selected for use in the present investigation:

1. Achievement
2. Age at Entrance
3. Course Load
4. Distance from Home
5. English Placement Scores

6. Housing
7. Intelligence Scores
8. Marital Status
9. Occupation of Parents
10. Reading Placement Scores
11. Sex
12. Service Status

The factors of health, participation in extracurricular activities, working status, and purpose in coming to college were excluded since the records pertaining to them were either incomplete or inaccurate and thus could not be considered as valid.

Definition of Terms

1. Drop-Out -- those students who completed at least the first semester's work, but failed to enroll for, or complete, the second and third, or the third semesters.
2. Non-Drop-Out -- those students who completed the first three semesters of their attendance at Northwestern.
3. Academic Status -- the identification of the students as belonging to either the drop-out or non-drop-out groups.
4. Achievement -- the score obtained by dividing the total number of grade points received by each student by the total number of semester hours carried. An hour of "A" is assigned four grade points; "B", three grade points; "C", two

grade points; "D", one grade point; and an "F" is assigned no grade points.

5. Age at Entrance -- the age of the student at the time he matriculates into college as a freshman.

6. Course Load -- the number of semester hours carried by the student in his first semester in attendance.

7. Distance from Home -- the number of miles each student's home is from the College.

8. English Placement Scores -- the score received by the student on the Barrett-Ryan-Schrammel English Test (Form Am, 1938) at the time he first enters into college.

9. Housing -- the place of residence of the student while attending the College. "College" housing refers to institutional dormitories or other college housing, whereas "non-College" housing refers to the students' own homes or to private homes and apartments.

10. Intelligence Scores -- the intelligence quotient score received by the student after taking the Otis Quick Scoring Mental Ability Tests (Forms Am and Bm, 1937).

11. Marital Status -- the designation of the student as single or married at the time he first enters college.

12. Occupation of Parent -- the occupation of each student's parent. In this study the parents are classified by occupations according to the four categories shown in the Occupational Outlook Handbook, (40).

13. Reading Placement Scores -- the score received

by the student on the reading test taken at the time he first enters college. The Nelson-Denny Reading Test for Colleges and Senior High Schools (Forms A and B, 1930) was used during the years 1950-53 and the Diagnostic Reading Tests (Survey Section Form A, 1947) were used in 1954.

14. Sex -- designation of the student as "male" or "female."

15. Service Status -- the military experience or non-military experience of an individual which is frequently referred to as "veteran" or "non-veteran."

Delimitation of the Problem

In selecting the area for research, the treatment of this problem has been limited to the following conditions:

1. The study is to include only those students attending Northwestern State College, Alva, Oklahoma.

2. The investigation is limited to those freshmen students who enrolled for the first time in September of the years 1950-51-52-53-54, and who attended for at least one complete semester.

3. Following the widely used Veterans Administration definition of a "full-time" student, only those students were included who carried twelve or more semester hours of course work during their first semester in attendance.

4. Students having incomplete placement scores were excluded.

5. Those students who transferred to other schools were considered neither as drop-outs nor non-drop-outs and thus were not included.

Selection of Subjects

Following the conditions set up by the delimitation of the problem, a total of 517 students were selected. Of these, 343 attended college for at least three semesters and thus fell into the "non-drop-out" group; while 174 failed to attend the College for at least three semesters and therefore were classified as "drop-outs."

A total of 123 other students were omitted from consideration for the following reasons: 45, according to official college records, had transferred to other colleges; 27 were carrying less than twelve semester hours of course work; 47 withdrew during the semester they initially enrolled and thus were not considered a part of the official college family; and 4 students lacked complete placement scores.

Process Followed in Gathering Data

The first step utilized in the process of gathering data was to determine what data were available. This was accomplished by examining all of the official college records found in the office of the registrar, the office of personnel, and the college health office. Records examined included the official enrollment card used by the college, the cumulative record folder in the office of personnel, the health card in

the college health office, and the official grade sheets and records of transferring students as found in the office of the registrar.

The data thus obtained were analyzed to determine what specific factors would be usable in the study to be undertaken. The factor areas were then selected and the order in which these factor areas appeared on the official college records was noted.

A practice data card, four inches by six inches, was then designed on which all of the selected information for each student could be placed. The various items were arranged on the card in the same order in which they appeared on the official college records.

An exploratory study consisting of twenty students, chosen randomly from the original population, was made to determine if the factor areas selected consistently appeared on the official records of the student population selected for the study. The data card was refined further and its final form is the one which appears in Appendix A.

The information for each student was then placed on the individual data card and these cards were filed alphabetically for each of the five years encompassed by the study. Separate sheets containing the raw scores or frequency distributions of each of the twelve factor areas were compiled for the total selected population and the scores were thus in the form necessary to make needed statistical calculations.

CHAPTER III

ANALYSIS OF DATA

Description of Statistical Method

The two primary statistical techniques employed in analyzing the data were the Chi Square and analysis of variance tests of significance.

The Chi Square test was used in the five factor areas that yielded enumeration or frequency data. This included the factors of housing, marital status, parent occupation, sex, and service status. In four cases the data are presented in a 2 x 2 contingency table. The formula used to determine significant difference at a specified level of confidence is the one suggested by Edwards (4).

Since the factor of parental occupation includes two criteria of classification, the data in this case are presented in a two-way contingency table having four categories and the calculation of Chi Square is then obtained through the use of Edwards' (5) formula in which both the observed and theoretical numbers are used.

The analysis of variance and the corresponding test of significance based upon the F distribution was used in

testing those factor areas dealing with numbers and their magnitude, i.e. continuous measurement. Factors thus tested included achievement, age at entrance, course load, distance from home, English ability, reading ability, and intellectual ability.

Edwards (5), in his discussion on variance describes the analysis of variance technique as follows:

The analysis of variance, as the name indicates, deals with variances rather than with standard deviations and standard errors. The rationale of the analysis of variance is that the total sum of squares of a set of measurements composed of several groups can be analyzed and broken down into specific parts, each part identifiable with a given source of variation. In the simplest case, the total sum of squares is analyzed into two parts: a sum of squares based upon variation within the several groups, and a sum of squares based upon the variation between the group means. Then, from these two sums of squares, independent estimates of the population variance are computed.

On the assumption that the groups or samples making up a total series of measurements are random samples from a common normal population, the two estimates of the population variance may be expected to differ only within the limits of random sampling. We may test this null hypothesis by dividing the larger variance by the smaller variance to get the variance ratio. (pp. 315-16)

Edwards further adds:

If the observed value of F equals or exceeds the tabled value, then the null hypothesis that the samples have been drawn from the same common normal population is considered untenable. If we reject the null hypothesis, the populations from which the samples have been drawn may differ in terms of either means or variances or both. (p. 316)

Since one of the assumptions underlying the use of the analysis of variance is that homogeneity of variance between the groups of data must exist, Bartlett's Test of

Homogeneity of Variance (4) was computed in each of the seven factor areas included in this group. In those cases where the test of homogeneity of variance revealed a significant departure from normality, the raw data were "transformed" in an attempt to reduce somewhat the heterogeneity of variance.

In the case of both the Chi Square and analysis of variance tests, the null hypothesis to be tested was that no significant statistical difference existed between the drop-out and non-drop-out groups and the hypothesis was either accepted or rejected at the .01 level of confidence.

A discussion of the five factor areas involving the Chi Square test of significance will be presented first. This presentation will then be followed by a discussion of the seven factor areas in which the analysis of variance and the corresponding test of significance based upon the F distribution is used.

Analysis of Housing Used by Students

Table 1 presents the frequency distribution of students living in college and non-college housing. The empirical or observed numbers appear by themselves and the theoretical or expected numbers appear in brackets. College housing included those students living either in college dormitories or in other college housing while non-college housing included those students who live in their own homes, in private homes, or in apartments.

TABLE 1

FREQUENCY DISTRIBUTION OF DROP-OUT AND NON-DROP-OUT
STUDENTS LIVING IN COLLEGE AND NON-COLLEGE HOUSING

Academic Status	College		Non-College		Total
Drop-Out	78	(84.5)	96	(89.5)	174
Non-Drop-Out	<u>173</u>	(166.5)	<u>170</u>	(176.5)	<u>343</u>
	251		266		517

In using Edwards' (5) computational model, the obtained Chi Square value of 1.238, for 1 degree of freedom, failed to reach significance at the prescribed .01 level of confidence. It is concluded that the differences existing between the drop-out and non-drop-out groups are "chance" differences and therefore not significant. The null hypothesis is therefore sustained.

An examination of the observed and theoretical frequencies appearing in Table 1 reveals that a larger proportion of the non-drop-out group tend to reside in college housing than is true of the drop-out group. This tendency, however, is not large enough to be a significant one.

Analysis of Marital Status upon Entrance to College

The frequency distribution of the marital status of the students at the time of initial entrance to college is found in Table 2. The marital status is expressed as "single" or "married."

TABLE 2

FREQUENCY DISTRIBUTION OF DROP-OUT AND NON-DROP-OUT SINGLE
AND MARRIED STUDENTS UPON ENTRANCE TO COLLEGE

Academic Status	Single	Married	Total
Drop-Out	162 (162.6)	12 (11.4)	174
Non-Drop-Out	<u>321</u> (320.4)	<u>22</u> (22.6)	<u>343</u>
	483	34	517

The obtained Chi Square value of .00046, for 1 degree of freedom, was not significant at the .01 level of confidence and it is concluded that the differences between the two groups are random differences and not significant. An examination of the observed and theoretical frequencies found in Table 2 reveals only a slight difference between them thus verifying the statistical result. The null hypothesis is therefore accepted.

Analysis of Parent Occupation

Table 3 presents the frequency distribution of the occupations of the parents of the students in the drop-out and non-drop-out groups. Because of the need for classification of the data in a manner which could be statistically treated, the occupations were placed into four divisions as found in the Occupational Outlook Handbook (40), a publication of the United States Department of Labor in cooperation with the Veterans Administration. The four occupational

TABLE 3

FREQUENCY DISTRIBUTION OF OCCUPATIONS OF PARENTS OF THE
DROP-OUT AND NON-DROP-OUT GROUPS

Academic Status	Occupational Divisions				Total
	I	II	III	IV	
Drop-Out	16 (24.2)	36 (32.2)	22 (19.8)	99 (96.7)	173
Non-Drop-Out	<u>56</u> (47.8)	<u>60</u> (63.8)	<u>37</u> (39.2)	<u>189</u> (191.3)	<u>342</u>
	72	96	59	288	515*

*Two people, one from each group, were not included in this table since their occupation was listed as "retired" and would not logically fit into any of the four divisions used.

divisions included are: (1) Professional, Semiprofessional, and Administrative Occupations; (2) Clerical, Sales and Service Occupations; (3) Trades and Industrial Occupations; and (4) Agricultural Occupations.

The Chi Square value of 5.310, for 3 degrees of freedom, failed to reach significance at the .01 level of confidence. An examination of the observed and theoretical frequencies reveals a tendency for the non-drop-out group to fall more readily into Occupational Division I than is true of the drop-out group. However, in the other three occupational divisions, there is a slightly greater tendency for the drop-out group to fall into those divisions than is true of the non-drop-out group. These differences are not significant, however, and the null hypothesis is therefore accepted.

Analysis of Sex Classification

The frequency distribution of the sex of each member of the drop-out and non-drop-out groups is presented in Table 4.

TABLE 4

FREQUENCY DISTRIBUTION OF THE DROP-OUT AND NON-DROP-OUT MALE AND FEMALE STUDENTS

Academic Status	Male	Female	Total
Drop-Out	101 (112.7)	73 (61.3)	174
Non-Drop-Out	<u>234</u> (222.3)	<u>109</u> (120.9)	<u>343</u>
	335	182	517

The obtained Chi Square value of 4.803, for 1 degree of freedom, was found not to be significant at the .01 level of confidence. Thus, the null hypothesis that the groups are normal samples from a common population is accepted. An examination of the observed and theoretical frequencies presented in Table 4 indicates that male students are less likely to drop out from college than female students. This tendency, however, is not large enough to be regarded as "significant" at the prescribed level of confidence.

Analysis of Service Status

Table 5 presents the frequency distribution of the service status of the drop-out and non-drop-out groups. The subjects are classified either as "veteran" or "non-veteran."

TABLE 5

FREQUENCY DISTRIBUTION OF DROP-OUT AND NON-DROP-OUT
VETERAN AND NON-VETERAN STUDENTS

Academic Status	Veteran	Non-Veteran	Total
Drop-Out	10 (12.8)	164 (161.2)	174
Non-Drop-Out	<u>28</u> (25.2)	<u>315</u> (317.8)	<u>343</u>
	38	479	517

The obtained Chi Square value of .667, for 1 degree of freedom, failed to reach significance at the .01 level of confidence. Although inspection of the observed and theoretical numbers appearing in Table 5 indicates that a larger proportion of the veterans in this College remain in school longer than is true of the non-veterans, the statistical result clearly indicates that the differences can be attributed to chance. We therefore accept the null hypothesis that no statistically significant difference exists between the drop-out and non-drop-out groups.

Analysis of Student Achievement

Since the analysis of variance test assumes that the samples are random samples from populations with a common variance, Bartlett's test for homogeneity of variance (4) was applied to the raw achievement scores. The obtained Chi Square value was found to be significant and hence the homogeneity of variance assumption could not be sustained. The

raw scores were then transformed into the \sqrt{x} scores which appear in Appendix B (pp. 66-68) and the test for homogeneity of variance was once again applied. This time the Chi Square value of 5.402 reached significance at the .05 level of confidence. Although the square root distribution more closely approached normality than was true of the raw data, it was not tenable to conclude that the two samples were from populations with a common variance.

Although the assumption of homogeneity of variance was not fully satisfied, it was decided to apply the analysis of variance test to the transformed achievement scores of the two groups, and, if a significant difference was found, the data would be further tested through the use of a test which did not require that the scores be distributed normally.

A summary of the analysis of variance of the achievement of the two groups is presented in Table 6. The value of

TABLE 6

ANALYSIS OF VARIANCE OF THE ACHIEVEMENT SCORES MADE
BY THE DROP-OUT AND NON-DROP-OUT GROUPS

Source of Variation	Sum of Squares	df	Mean Square	F
Between groups	3.522	1	3.522	
Within groups	<u>83.828</u>	<u>515</u>	.163	21.607**
	87.350	516		
**Significant at the .01 level of confidence				

F for the test of significance is obtained by dividing the mean square between groups of 3.522 by the mean square within groups of .163. From the table of F it is found that for 1 and 515 degrees of freedom, the obtained value of 21.607 far exceeds the tabled value of 6.69 required for significance at the .01 level of confidence.

It may be seen in examining Table 7 that the standard deviation of the drop-out group is .442 and that of the non-drop-out group is .379. It is further to be observed that the mean achievement scores of the non-drop-out group are higher than the mean of the drop-out group. This analysis reveals a considerably greater deviation from a common population on the part of the drop-out group.

TABLE 7
STANDARD DEVIATION AND MEAN SCHIEVEMENT SCORES
OF DROP-OUT AND NON-DROP-OUT GROUPS

Academic Status	N	Mean	Standard Deviation
Drop-Out	174	1.359	.442
Non-Drop-Out	343	1.534	.379

Since a significant difference was found when the analysis of variance test was applied to the transformed achievement scores, and, since the test for homogeneity of variance failed to satisfy the assumption that the data was from a common population, a non-parametric test was then

applied. This type of test enables the investigator to compare two distributions without the necessity of making any assumption about how the scores are distributed in the population. In this case, the H rank-order test developed by Kruskal and Wallis (5) was followed.

Keeping in mind that the value of H is distributed as in Chi Square, the obtained value of 41.54, for 1 degree of freedom, far exceeds the tabled value of 6.635 required for significance at the .01 level of confidence. The result obtained in this case is thus in agreement with that found earlier when the analysis of variance test was employed. The null hypothesis is therefore rejected and it is concluded that significant differences in achievement exist at this College between the drop-out and non-drop-out groups.

Analysis of Age at Entrance into College

The \sqrt{x} transformed age at entrance scores are found in Appendix B (pp. 69-71). When the test of homogeneity of variance was computed, the Chi Square value of .04145 failed to reach significance at the .05 level of confidence, indicating that the homogeneity of variance assumption was satisfied.

Table 8 presents a summary of the analysis of variance of the transformed age at entrance scores of the drop-out and non-drop-out groups. While it appears obvious that some variation exists between the two groups, yet the obtained F value

TABLE 8

ANALYSIS OF VARIANCE OF THE AGE AT ENTRANCE OF
THE DROP-OUT AND NON-DROP OUT-GROUPS

Source of Variation	Sum of Squares	df	Mean Square	F
Between groups	.215	1	.215	
Within groups	<u>406.691</u>	<u>515</u>	.790	.2722
	406.906	516		

of .2722, for 1 and 515 degrees of freedom, falls short of the tabled value of 6.69 required for significance at the .01 level of confidence. The null hypothesis being tested is therefore accepted.

Now, it can be seen from an examination of Table 9 that the standard deviation of the drop-out group is .703 and the standard deviation of the non-drop-out group is .966. It is further noted that the mean age at entrance scores of the two groups differ but slightly. This analysis reveals a

TABLE 9

STANDARD DEVIATION AND MEAN AGE AT ENTRANCE SCORES
OF DROP-OUT AND NON-DROP-OUT GROUPS

Academic Status	N	Mean	Standard Deviation
Drop-Out	174	15.029	.703
Non-Drop-Out	343	15.073	.966

greater divergence from a common population on the part of the non-drop-out group when compared to the drop-out group.

Analysis of Course Load

The test of homogeneity of variance was applied to the course load raw scores appearing in Appendix B (pp. 72-73). The computed Chi Square value of 4.532 reached significance at the .05 level of confidence. When the raw scores were transformed into square root scores and the test of homogeneity of variance was applied, the Chi Square value of 7.372 also reached significance at the .05 level of confidence. Although the raw data more nearly met the assumption that the two samples were from a common population, it could not be concluded that this condition had been satisfied.

It was decided, therefore, to apply the analysis of variance test to the course load raw scores of the two groups, and, if a significant difference was found, the data would be then tested by the Kruskal-Wallis test which was described earlier in the section dealing with student achievement.

Table 10 presents a summary of the analysis of variance of the course load of the two groups. From the table of F it is found that for 1 and 515 degrees of freedom, the obtained value of 22.418 far exceeds the tabled value of 6.69 required for significance at the .01 level of confidence.

An examination of Table 11 reveals that the standard deviation of the drop-out group is 1.231. This is considerably

TABLE 10

ANALYSIS OF VARIANCE OF THE COURSE LOAD OF THE
DROP-OUT AND NON-DROP-OUT GROUPS

Source of Variation	Sum of Squares	df	Mean Square	F
Between groups	28	1	28.0	
Within groups	<u>643</u>	<u>515</u>	1.249	22.418**
	671	516		

**Significant at the .01 level of confidence.

larger than the 1.056 deviation computed for the non-drop-out group. The mean course load score of the non-drop-out group is 15.262 as compared to a mean of 14.782 for the drop-out group.

TABLE 11

STANDARD DEVIATION AND MEAN COURSE LOAD SCORES OF
THE DROP-OUT AND NON-DROP-OUT GROUPS

Academic Status	N	Mean	Standard Deviation
Drop-Out	174	14.782	1.231
Non-Drop-Out	343	15.262	1.056

When the Kruskal-Wallis Test of significance was applied to the course load raw scores appearing in Appendix B, the calculated H value of 17.853, including a correction for tied ranks, and for 1 degree of freedom, was found to

exceed the tabled value of 6.635 required for significance at the .01 level of confidence. The result thus obtained is in agreement with the analysis of variance finding. One may then conclude that the means of the drop-out and non-drop-out groups differ significantly among themselves with the inference that the differences in course load of the two groups are indicative of real differences.

Analysis of Distance from Home

The \sqrt{x} transformed scores relating to distance between home and college appear in Appendix B (pp. 74-76). Since a large number of the students live in the same county in which the College is located, the exact distance was computed for those students; while for students living in other counties, such distance was obtained by use of a standard map based on home addresses.

TABLE 12

SUMMARY OF ANALYSIS OF VARIANCE OF THE DISTANCE FROM HOME OF DROP-OUTS AND NON-DROP-OUTS

Source of Variation	Sum of Squares	df	Mean Square	F
Between groups	.492	1	.492	
Within groups	<u>7339.662</u>	<u>515</u>	14.252	.0345
	7340.154	516		

The two groups were assumed to be from a homogeneous population when the Chi Square value of .2141 failed to reach

significance at the .05 level of confidence after the test for homogeneity of variance was applied.

In the summary of the analysis of variance which appears in Table 12, the obtained F value of .0345, for 1 and 515 degrees of freedom falls short of the tabled value of 6.69 required for significance at the .01 level of confidence. The null hypothesis is again sustained.

When Table 13 is examined, it is found that the drop-out group has a standard deviation of 3.839 while that of the non-drop-out group is 3.732. The drop-out group tends to deviate more from a common population than is true of the non-drop-out group. It is observed, however, that the mean distance from home scores of both groups tend to differ but slightly with the mean of the drop-out group being 5.482 as compared to 5.417 for the non-drop-out group. In this case, the drop-out group has a slightly larger mean than does the other group.

TABLE 13

STANDARD DEVIATION AND MEAN DISTANCE FROM HOME SCORES
OF THE DROP-OUT AND NON-DROP-OUT GROUPS

Academic Status	N	Mean	Standard Deviation
Drop-Out	174	5.482	3.839
Non-Drop-Out	343	5.417	3.732

Analysis of English Ability

The raw scores received by the drop-out and non-drop-out groups on the Barrett-Ryan-Schrammel English Test are found in Appendix B (pp. 77-78). This test is given for placement purposes and the results obtained are used for measuring each student's general aptitude in English before allowing them to enroll in a class. The same test was used during all of the five years included in the study.

When the test for homogeneity of variance was applied, the obtained Chi Square value of 2.571 failed to reach significance at the .05 level of confidence and it was therefore assumed that the two groups of scores were from a homogeneous population.

A summary of the analysis of variance of the English placement scores of the two groups is presented in Table 14. From the table of F it is found that for 1 and 515 degrees of freedom the obtained value of .1347 is much less than the

TABLE 14

SUMMARY OF ANALYSIS OF VARIANCE OF THE ENGLISH PLACEMENT SCORES MADE BY THE DROP-OUT AND NON-DROP-OUT GROUPS

Source of Variation	Sum of Squares	df	Mean Square	F
Between groups	43.0	1	43.0	
Within groups	<u>164383.0</u>	<u>515</u>	319.2	.1347
	164426.0	516		

tabled value of 6.69 required for statistical significance at the .01 level of confidence. The null hypothesis is therefore accepted and we may conclude that our observed value is not significant of any real differences in the English placement scores of the two academic groups.

The standard deviations and mean English placement scores of the two groups are presented in Table 15. The mean score of 82.328 for the drop-out group is nearly the same as the mean score of 82.933 obtained for the non-drop-out group. It is found, however, that the standard deviation score of 19.047 for the drop-out group is somewhat greater than the score of 17.180 for the non-drop-out group.

TABLE 15

STANDARD DEVIATION AND MEAN ENGLISH PLACEMENT SCORES
OF THE DROP-OUT AND NON-DROP-OUT GROUPS

Academic Status	N	Mean	Standard Deviation
Drop-Out	174	82.328	19.047
Non-Drop-Out	343	82.933	17.180

Analysis of Students' Intellectual Ability

The intelligence Quotient raw scores may be found in Appendix B (pp. 79-80). The scores represent those made by the members of both the drop-out and non-drop-out groups on the Otis Quick Scoring Mental Ability Tests. This test is given to each freshman student upon entrance into college and

is part of the placement battery of tests. The same test was used during all of the five years included in this study.

The assumption that homogeneity of variance exists in the scores of the two groups was satisfied when the obtained Chi Square value of 1.5094 failed to reach significance at the .05 level of confidence.

The summary of this analysis is given in Table 16 and it is obvious that although there is some variation in the means of the two groups, it is not significant in a statistical sense. From the table of F it is found that our obtained value of 2.933, for 1 and 515 degrees of freedom, is less than the tabled value of 6.69 required for significance at the .01 level of confidence. The null hypothesis being tested is thus accepted and we may conclude that no real differences exist between the two groups.

TABLE 16

SUMMARY OF ANALYSIS OF VARIANCE OF INTELLIGENCE QUOTIENT SCORES OF THE DROP-OUT AND NON-DROP-OUT GROUPS

Source of Variation	Sum of Squares	df	Mean Square	F
Between groups	313	1	313.0	
Within groups	<u>54976</u>	<u>515</u>	106.7	2.933
	55289	516		

The mean and standard deviation intelligence scores presented in Table 17 indicate that the drop-out group tends

TABLE 17

STANDARD DEVIATION AND MEAN INTELLIGENCE QUOTIENT
SCORES OF THE DROP-OUT AND NON-DROP-OUT GROUPS

Academic Status	N	Mean	Standard Deviation
Drop-Out	174	104.431	10.851
Non-Drop-Out	343	106.079	10.025

to show a larger deviation than is true of the non-drop-out group, with the standard deviation of the first group being 10.851 as compared with 10.025 for the latter group. The non-drop-out group has a mean I. Q. score of 106.079 as compared with 104.431 for the drop-out group. Such difference is small, however, and in general agreement with the statistical result.

Analysis of Reading Ability

The reading placement scores of the two groups being compared in this study may be found in Appendix B (pp. 81-83). It was necessary to analyze the 1954 scores separately since a different test was used in that year. The Nelson-Denny Reading Test for Colleges and Senior High Schools was used from 1950 through 1953, whereas the Diagnostic Reading Test was given in 1954.

The test for homogeneity of variance was applied to the raw scores of the 1950-53 group and the \sqrt{x} transformed scores of the 1954 group. A Chi Square value of .7043 was

TABLE 18

SUMMARY OF ANALYSIS OF VARIANCE OF THE READING
SCORES OF THE 1950-53 DROP-OUT AND
NON-DROP-OUT GROUPS

Source of Variation	Sum of Squares	df	Mean Square	F
Between groups	352	1	352.0	
Within groups	<u>188884</u>	<u>392</u>	481.846	.7305
	189236	393		

obtained for the 1950-53 group and a value of .1105 for the 1954 group. Neither of these scores reached significance at the .05 level of confidence and it was assumed that the homogeneity of variance assumption had been satisfied.

Tables 18 and 19 present a summary of the analysis of variance of the reading scores for the 1950-53 and 1954 groups, respectively. From the table of F it is found that our observed value of .7305 for the 1950-53 group falls short of the tabled value of 6.70, for 1 and 392 degrees of freedom, required for significance at the .01 level of confidence.

TABLE 19

SUMMARY OF ANALYSIS OF VARIANCE OF THE READING SCORES
FOR THE 1954 DROP-OUT AND NON-DROP-OUT GROUPS

Source of Variation	Sum of Squares	df	Mean Square	F
Between groups	.005	1	.005	
Within groups	<u>97.006</u>	<u>121</u>	.8017	.0062
	97.011	122		

In like manner, from the table of F, it is found that for 1 and 121 degrees of freedom the obtained value of .0062 for the 1954 group is much less than the tabled value of 6.84 required for significance at the .01 level of confidence.

One may conclude that the observed values in both cases are not indicative of any real differences in the reading placement scores of the drop-out and non-drop-out groups.

TABLE 20
STANDARD DEVIATION AND MEAN READING SCORES
OF THE 1950-53 DROP-OUT AND
NON-DROP-OUT GROUPS

Academic Status	N	Mean	Standard Deviation
Drop-Out	146	58.932	22.715
Non-Drop-Out	248	60.887	21.397

It may be seen in examining the standard deviations and mean reading scores of the 1950-53 groups that the non-drop-out group has a slightly greater mean and tends to deviate less than does the drop-out group. However, when one

TABLE 21
STANDARD DEVIATION AND MEAN READING SCORES OF THE
1954 DROP-OUT AND NON-DROP-OUT GROUPS

Academic Status	N	Mean	Standard Deviation
Drop-Out	28	8.175	.840
Non-Drop-Out	95	8.159	.899

examines Table 21, in which the mean reading scores and standard deviations of the 1954 drop-out and non-drop-out groups are found, the tendency is reversed. The non-drop-out group tends to have a greater deviation and a slightly smaller mean than does the drop-out group. These over-all differences are small, however, and are in agreement with the statistical result.

CHAPTER IV

SUMMARY AND IMPLICATIONS

Summary

The stated purpose of this study is to help identify those students who are more likely to be "drop-outs" at Northwestern State College. After a preliminary survey to determine the usability, uniformity, and validity of the data, twelve factors were selected for consideration. The total population to be examined was divided into two groups: those who left school within the defined period of time and those who remained. The first group was designated as the "drop-out" group and the second group was designated as the "non-drop-out" group. The two groups were statistically compared in each of the twelve factors to determine what differences, if any, existed between them.

Significant differences in favor of the non-drop-out group were found in two of the twelve factor areas -- achievement, where the non-drop-outs had a mean score of 1.534 as compared with 1.359 for the drop-out group; and course load, where the non-drop-out group carried a mean load of 15.262 semester hours as compared to 14.782 semester hours for the drop-out group.

No significant differences were found when the drop-out and non-drop-out groups were statistically compared in the remaining ten factor areas. These included age at entrance, distance from home, housing, occupation of parent, marital status, service status, sex, English placement scores, reading placement scores, and intelligence quotient scores.

The Chi Square calculations relating to housing were derived from the data appearing in Table 1 (p. 23) and reveal that the obtained value of 1.238 was not significant at the .01 level of confidence. An examination of the theoretical or assumed frequencies indicates a slightly greater tendency for the drop-outs in this College to live in non-college housing than is true of the non-drop-out group. However, such difference is not found to be a significant one.

The marital status of both the drop-out and non-drop-out groups when they first entered college was found not to be significant at the .01 level of confidence. The Chi Square value of .00046, which was obtained from the data appearing in Table 2 (p. 24), was extremely small and this result is easily understood when the theoretical frequencies are examined and found to be almost identical to the observed frequencies.

An analysis of the occupations of the parents of the students indicated no significance at the .01 level of confidence. An examination of the four divisions of occupations revealed that in the case of 9.2 per cent of the drop-outs,

parents' occupations fell into the professional, semiprofessional, and administrative occupations; 20.8 per cent belonged to the clerical, sales, and service occupations; 12.7 per cent had parents whose occupations were in trades and industrial fields; and 57.2 per cent of the parents were engaged in agricultural occupations.

A similar break-down of the non-drop-out group reveals 16.4 per cent; 17.5 per cent; 10.8 per cent; and 55.3 per cent, respectively, in the four occupational divisions used in this study. There is a tendency for a greater proportion of the non-drop-out group to fall into the professional, semiprofessional, and administrative occupations than is true of the drop-out group. A slight tendency is revealed for the drop-out group to fall into the remaining three occupational divisions in a greater proportion than the non-drop-out group, but the differences are small.

An examination of the calculations obtained from Table 4 (p. 26) which relates to the sex of the students in the two academic groups, reveals that the obtained Chi Square value of 4.803 fails to reach significance at the .01 level of confidence. A look at the theoretical frequency distribution indicates a tendency for a larger proportion of the male population to remain in college than is true of the female population. Such a finding is not compatible with the general finding that men drop out at a greater rate than women.

The Chi Square calculations relating to the service status of both the groups are obtained from Table 5 (p. 27). The obtained value of .667 failed to reach significance at the .01 level of confidence. An examination of the theoretical frequencies indicates little difference between them and the original data. This finding thus fails to concur with the general research results that veteran students drop from college at a lower rate than do those students classified as non-veterans.

An inspection of Table 6 (p. 28) shows that the calculations for achievement of the drop-out and non-drop-out groups resulted in an F value of 21.607 which reached significance at the .01 level of confidence. An examination of the means reveals that the non-drop-out group had a mean score of 1.534 as compared with the mean score of 1.359 for the drop-out group. This finding is in keeping with the results obtained by most other studies of this factor. Jordan (22), Eurich (18), Moon (27), Cuff (15), and McNeeley (40), all found that those who remain in college achieve more than those who leave. When the over-all scores are analyzed, however, it is found that 18.4 per cent of the drop-out group, or nearly two people out of every ten, had a "B" average or above.

Table 8 (p. 31) reveals that the calculations for age at entrance into college resulted in an F value of .2722 which is not significant at the .01 level of confidence. An

examination of the original raw score means finds, however, that the drop-out group has a mean age of 226.36 months or 18.86 years, whereas the non-drop-out group has a mean age of 228.13 months or 19.01 years. The drop-out group is thus slightly less than two months younger than the non-drop-out group.

A closer examination of the group shows that 4.0 per cent of the drop-out group and 4.7 per cent of the non-drop-out group were $17\frac{1}{2}$ years of age or younger when they first enrolled in college. It was also found that 15.5 per cent of the drop-out group and 14.6 per cent of the non-drop-out group were $19\frac{1}{2}$ years of age or older when they first entered college.

The present statistical result is not in agreement with the findings of most research studies which place the withdrawing group as being older than the group which remains in college.

Table 10 (p. 33) indicates that the analysis of variance calculations for course load resulted in an F value of 21.449 which reached significance at the .01 level of confidence. An examination of the means reveals that the non-drop-out group carried a mean load of 15.262 semester hours as compared with a mean load of 14.782 semester hours for the drop-out group. Although this difference in course load does not at first appear to be very large, it is to be remembered that only those students carrying a course load of

twelve hours or more are included in the study.

Table 12 (p. 34), which summarizes the analysis of variance of the distance from home of the two groups, clearly indicates that the obtained F value of .0345 fails to reach significance at the .01 level of confidence.

When the means from the original raw data are computed, it is found that the mean distance from home of the drop-out group is 44.79 miles as compared with a mean of 43.16 miles of the non-drop-out group. The data was further analyzed to obtain the percentage of both groups who lived at a distance of more than fifty miles from the college. The results obtained add credence to the statistical result since it was found that 33.9 per cent of the drop-out group and 33.8 per cent of the non-drop-out group fell into this category.

Table 14 (p. 36), which summarizes the analysis of variance of the English scores received by the two groups on the placement examinations indicates an F score of .1347, which is not significant at the .01 level of confidence. The mean score of the drop-out group in English is 82.33, whereas the mean score of the non-drop-out group is 82.93.

Examination of the raw score distribution confirms the overall lack of statistical difference when it is found that 29.3 per cent of the drop-out group and 30.9 per cent of the non-drop-out group fall into the upper third of the combined distributions of the two groups, while 33.3 per cent of the drop-out group and 30.0 per cent of the non-drop-out

group were in the lower third of the total distribution.

The above finding is not compatible with the general consensus that non-drop-outs have higher English scores on placement examinations than those who withdraw from college prematurely.

An inspection of Table 16 (p. 38) shows that the analysis of variance of the intelligence quotient scores resulted in an F value of 2.933 which was not significant at the .01 level of confidence. The mean score of the non-drop-out group was found to be 106.079 which is slightly higher than the mean score of 104.431 for the drop-out group. Both groups fell within the range of what is considered as average intelligence.

The results of this analysis do not coincide with the findings of other research studies which show that those students who withdraw from college are, as a group, significantly lower in intelligence than those who remain.

Tables 18 (p. 40) and 19 (p. 40), which present a summary of the analysis of variance of the reading scores of the 1950-53 and 1954 groups, respectively, indicate that both of the F scores fail to reach significance at the .01 level of confidence. Such information does not correspond with that reported by other studies which show that those students who remain in college generally have higher reading scores than those who drop out.

Implications

The data discussed in this investigation suggest the following implications:

1. As indicated by the data collected, analyzed, and reported, there appear to be identifiable factors which may help to determine whether a student is a potential drop-out from this College. Early recognition of these areas and prompt reporting of potential drop-outs to guidance personnel could possibly reduce the incidence of early school leaving and thereby increase the holding power of Northwestern State College.
2. A most striking conclusion to be drawn from the present study is that there is high statistical significance in such factors termed herein as achievement and course load.
3. Although standard statistical methods were applied in an attempt to find a pattern of factors distinctively characteristic of non-drop-out and drop-out students, it may be observed that not more than two significant factors were identified.
4. Evidence from this investigation seems to indicate that many students who withdrew from Northwestern State College between the years 1950 and 1955, experienced course failure in the first year of their college experience.
5. For those planning guidance programs, the potential drop-out should be discovered before he takes himself out of college. Guidance personnel may be inclined, however,

to overlook a second and equally important responsibility. They must join with other staff members to provide these potential school leavers with in-school learning experiences which will be accepted as meeting the needs of each student.

6. Although a selective elimination of students may operate in a just fashion to all concerned in such a school as Northwestern State College, it can hardly be thought that an ideal situation might exist wherein there would be no drop-outs. However, it is the responsibility of the college personnel to improve the holding power of the whole program without sacrificing academic standards of the College.

7. Quite possibly there are dynamic factors such as motivation, interest, etc., that make for academic success among non-drop-outs which are not manifest statistically in the factors of age, distance from home, housing, intelligence, marital status, parent occupation, service status, sex, and English and reading ability.

8. The point-score achievement evidenced in the records of non-drop-outs indicates in part a grouping of factors which make for academic success at Northwestern State College.

9. It appears possible that a type tendency may actually exist within a measureable concept of the point-score achievement of a group of college students.

10. Data collected in the present study emphasize the regression in scholarship (achievement in quality points)

evidenced by early college leavers.

11. The percentage of married students entering this College approximates seven per cent of the entire group and thus does not have any appreciable influence in determining whether students will continue in this College or withdraw.

12. The factors of achievement and course load may well hold constant in studies which would seek to find their possible relationship with such factors as major field, type of counseling program, instructional practices, class size, and selection on dean's lists and other honor awards.

13. There appears to be no evidence of college counseling which seeks to adjust atypical and exceptional enrollees' programs of academic work to their individual achievements and needs.

14. It appears that the course load elected by the students or recommended by the college staff is inflexible in view of the number of drop-outs.

15. It may be assumed that there is an optimum number of course hours (Carnegie unit) that a non-drop-out completes within a semester. In the present study, such a course load has been calculated to be 15.26 semester hours. The evidence from this data supports the general recommendation that an undergraduate at this College elect a program of sixteen or fewer semester hours.

16. The information provided to the writer by the College concerning their drop-outs shows that most were of

sufficiently high intelligence, as indicated by their I. Q.'s, to do the college work. (One finds that nearly three students of every ten of the drop-outs were in the upper third in intelligence of the entire groups combined).

17. Evidence seems to indicate that early school leavers of Northwestern State College come from homes which are typical for all youth in this region of the United States.

18. Since the results of some of the factors analyzed in this study do not coincide with studies of like factors made in other institutions, it is to be expected that each school must study the factors operating in its particular situation if it desires to obtain reliable information concerning its college population.

19. The statistical instruments used in this investigation may be given wider use with data drawn from a larger original population.

20. The data card designed for use in this study might well be used by an investigator seeking to attack a like problem.

21. Because of the large number of calculations which this type of study requires, an investigator might well have achieved some skill in the use of a calculating machine.

22. The permanent record cards of the students from this College should be of the most modern and comprehensive design in order that the fullest possible data may be a matter of record.

23. The administrative officials responsible for keeping student records have been cordially cooperative in making the data available.

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APPENDIX A

SAMPLE OF DATA CARD

DATA CARD

_____ (Name) _____		
Y _____	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> Sex	
Age _____		<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div>
Occ _____		<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div>
Town _____		<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div>
<div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="width: 45%;"> Load _____ </div> <div style="width: 10%;"></div> <div style="width: 40%; text-align: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> </div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-end; margin-top: 10px;"> <div style="width: 45%;"> Ach _____ </div> <div style="width: 10%;"></div> <div style="width: 40%; text-align: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> </div> </div>		
<div style="display: flex; justify-content: flex-end; align-items: flex-end;"> <div style="width: 40%; text-align: right;"> R _____ </div> <div style="width: 10%;"></div> <div style="width: 40%; text-align: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> </div> </div> <div style="display: flex; justify-content: flex-end; align-items: flex-end; margin-top: 10px;"> <div style="width: 40%; text-align: right;"> E _____ </div> <div style="width: 10%;"></div> <div style="width: 40%; text-align: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> </div> </div> <div style="display: flex; justify-content: flex-end; align-items: flex-end; margin-top: 10px;"> <div style="width: 40%; text-align: right;"> IQ _____ </div> <div style="width: 10%;"></div> <div style="width: 40%; text-align: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> </div> </div>		
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> D </div> <div style="text-align: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> N </div> <div style="text-align: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> Tr </div> </div>		

Y = Year

Age = Age in Months

Occ = Occupation of Parent

Town = Home of student

Load = No. of semester hours

Ach = Achievement

R = Reading score

E = English score

I.Q. = Intelligence Quotient

D = Drop-out

N = Non-drop-out

Tr = Transferred

APPENDIX B

**SCORES OF DROP-OUT AND NON-DROP-OUT GROUPS
IN SELECTED FACTOR AREAS**

SQUARE ROOT SCORES IN ACHIEVEMENT*

Drop-Out Group

1.543	1.300	1.360	1.870	1.916
.787	1.808	1.386	1.000	.000
.964	1.212	1.936	1.241	1.034
.000	1.549	1.931	1.241	1.393
1.895	.911	1.652	1.852	1.068
1.277	1.389	.600	1.533	1.500
1.323	1.871	1.949	1.338	1.749
1.844	1.237	1.225	.000	1.543
1.612	.728	.927	1.936	1.225
1.466	1.549	1.897	1.513	1.249
1.000	1.871	1.345	1.039	1.543
1.237	1.936	1.414	1.459	1.549
1.257	1.435	1.439	1.095	1.952
1.732	1.281	1.034	1.500	1.439
1.712	1.640	1.456	1.520	1.292
1.459	1.463	.964	1.952	1.803
1.819	1.652	1.389	1.330	1.838
1.034	.539	1.985	1.786	1.249
1.414	1.292	1.414	.000	1.581
1.371	.800	1.480	1.769	1.439
1.625	1.709	.964	.964	.436
1.034	1.118	1.439	1.273	1.389
1.942	1.591	1.000	1.658	1.249
1.100	.964	1.572	1.063	.632
1.887	1.755	1.581	1.183	1.225
1.625	1.323	1.315	1.926	1.625
.000	1.483	1.634	.000	1.947
1.697	1.442	1.389	1.612	1.622
1.697	1.609	1.386	1.225	1.414
1.603	1.921	1.697	1.091	1.277
1.300	1.513	1.819	1.367	1.594
1.600	1.572	.000	.539	1.435
1.386	1.640	1.712	1.208	1.562
.265	1.300	1.459	1.323	.600
1.153	.458	1.581	1.825	

*N = 174

SQUARE ROOT SCORES IN ACHIEVEMENT

Non-Drop-Out Group

1.863	1.342	1.308	1.732	1.766
1.766	1.323	1.520	1.697	1.483
1.562	1.500	1.697	1.414	1.715
1.526	1.800	1.852	1.732	1.661
1.808	1.292	1.435	1.483	1.225
1.838	1.367	1.493	1.237	1.676
1.581	1.603	1.323	1.658	1.581
1.034	1.985	1.970	1.543	1.513
1.697	1.225	1.697	1.939	1.549
1.342	1.838	1.559	1.838	1.634
1.549	1.985	1.435	1.466	1.833
1.640	1.732	1.819	1.600	1.709
1.520	.894	1.694	1.863	1.572
1.562	1.034	1.679	1.572	1.459
1.732	1.819	1.921	1.609	1.634
1.830	1.543	1.315	1.300	2.000
1.752	1.855	1.459	1.520	1.034
1.895	1.323	1.652	1.844	1.679
1.389	1.549	1.769	1.497	1.600
1.414	1.732	.970	1.249	1.536
1.367	1.814	1.830	1.483	1.439
1.732	1.676	1.715	1.225	1.175
1.572	.938	1.342	1.634	1.855
1.389	1.863	1.414	1.658	1.634
1.500	1.543	1.652	1.225	1.249
1.591	1.543	1.466	1.225	1.749
1.500	1.640	1.673	1.646	1.697
1.526	1.253	1.670	1.513	1.466
1.273	1.459	1.709	1.808	1.694
1.939	1.513	1.572	.964	1.225
1.562	1.520	1.697	1.323	2.000
1.786	1.342	1.363	1.414	1.819
1.769	1.572	1.500	1.600	1.887
1.536	1.658	1.769	1.905	1.459
1.389	1.513	1.095	1.652	1.936

(Non-Drop-Out Achievement Scores Continued)*

1.265	1.803	1.371	1.640	1.175
1.543	1.732	.574	1.838	1.844
1.562	1.480	1.520	1.393	1.414
1.265	1.965	1.612	.970	1.414
1.732	1.463	.728	1.507	1.500
1.640	1.673	1.871	1.249	2.000
1.549	1.476	1.808	1.715	1.949
1.308	1.612	1.769	1.487	1.342
2.000	1.808	1.581	1.819	1.814
1.249	1.600	1.414	1.183	1.338
1.769	1.342	2.000	1.393	1.265
1.749	1.694	1.732	1.715	1.789
1.549	1.526	1.459	1.949	.819
1.183	1.897	1.237	1.480	1.338
1.439	1.697	1.622	1.500	2.000
1.300	1.949	1.658	1.855	1.393
1.664	1.819	1.985	1.034	1.652
1.459	1.612	1.507	1.749	1.634
.964	1.697	1.459	1.658	1.786
1.549	1.715	1.136	1.600	1.507
1.095	1.500	1.921	2.000	1.323
1.789	1.855	1.634	1.520	1.435
1.212	1.414	1.063	1.803	1.652
1.000	1.897	1.749	1.292	1.712
1.459	1.658	1.315	1.526	1.315
1.330	1.640	1.652	1.749	.800
1.360	.938	1.697	1.459	1.697
1.682	1.500	1.200	1.646	1.855
1.439	1.526	1.652	1.612	
1.887	1.949	1.292	1.459	
1.507	1.749	1.838	1.513	
1.871	1.694	1.732	1.389	
1.480	1.603	1.752	1.249	
1.709	1.414	1.855	1.905	
1.039	1.439	1.676	1.838	

*N = 343

SQUARE ROOT SCORES IN AGE AT ENTRANCE*

Drop-Out Group

15.811	14.900	14.457	14.697	14.799
14.697	14.832	15.100	15.362	15.199
15.067	15.166	14.933	15.199	15.133
18.655	15.330	14.731	14.491	14.731
14.629	14.832	14.866	14.629	15.556
14.799	14.832	16.031	14.595	14.933
14.967	18.921	14.832	14.560	14.765
14.731	16.031	14.697	14.697	14.765
14.900	14.765	14.491	15.199	14.900
15.748	14.697	14.866	14.799	15.556
14.765	14.933	14.900	15.000	14.560
16.613	14.765	14.765	14.560	15.000
14.663	14.731	14.832	14.629	14.967
14.799	14.900	14.663	14.629	14.663
14.765	14.560	15.460	15.067	14.832
15.000	14.283	15.395	14.799	14.526
14.526	14.900	15.033	14.866	14.697
15.100	15.100	17.692	15.000	14.731
14.595	15.937	15.460	14.799	14.629
14.491	15.067	14.629	14.900	17.349
14.663	15.653	15.427	14.900	14.967
14.799	14.560	14.799	15.232	14.799
14.595	14.629	14.560	14.697	14.866
14.866	14.353	15.395	14.697	17.000
15.199	14.731	14.697	15.067	14.832
14.595	15.133	15.524	14.663	17.664
14.731	14.560	14.697	14.832	14.866
14.595	14.248	14.967	14.799	15.232
14.731	14.765	16.340	14.799	14.799
14.933	14.697	14.799	14.595	14.799
14.866	14.765	15.000	14.933	14.967
14.629	14.765	15.811	17.407	14.832
14.697	14.765	14.933	15.166	14.765
14.967	14.933	14.731	16.432	14.697
14.731	14.595	14.731	15.264	

*N = 174

SQUARE ROOT SCORES IN AGE AT ENTRANCE

Non-Drop-Out Group

14.731	14.629	14.697	15.100	14.663
14.933	14.629	14.900	15.875	14.697
14.318	15.232	14.697	15.524	14.629
15.362	14.491	14.697	14.697	14.866
14.595	15.000	14.595	14.697	14.663
14.799	14.629	14.866	14.799	14.595
14.832	14.697	14.799	15.460	14.697
14.799	14.595	14.900	14.799	16.432
15.033	14.765	14.933	14.318	14.731
15.033	14.560	14.560	14.663	14.663
15.033	14.832	14.595	14.765	16.553
14.765	15.589	14.933	16.882	15.100
14.832	14.457	14.353	14.765	14.663
14.832	15.033	15.000	14.595	15.492
14.629	14.832	14.731	14.663	14.560
14.595	14.799	14.967	14.967	14.595
18.735	14.900	14.799	14.697	15.780
19.105	14.832	15.100	15.000	16.125
15.199	14.663	14.560	14.388	14.629
14.595	14.799	14.832	14.697	14.900
15.589	14.866	14.765	14.765	14.663
14.933	14.731	14.933	16.217	14.629
14.866	14.832	15.000	14.933	14.731
14.595	14.765	14.663	14.799	14.900
14.799	14.967	14.967	15.000	14.526
14.799	14.560	14.731	16.217	14.866
18.974	14.663	14.491	14.697	14.697
14.697	15.330	14.595	14.832	14.595
14.629	14.731	15.716	14.799	14.799
16.063	14.866	14.629	14.765	15.362
14.799	14.832	14.560	15.748	14.629
15.067	14.353	14.526	14.283	14.799
14.832	14.560	14.595	14.663	14.866
14.933	15.199	15.067	14.799	15.033
14.142	15.100	14.933	14.629	14.663

(Non-Drop-Out Age at Entrance Scores Continued)*

17.748	14.595	14.832	14.663	16.553
14.799	15.330	15.330	15.033	14.353
16.523	15.067	14.832	14.491	14.663
14.866	14.629	14.933	14.731	14.933
14.799	14.560	14.832	14.731	14.799
14.595	14.765	14.663	14.933	14.765
14.663	18.385	14.663	14.967	14.663
17.635	15.000	14.731	14.560	16.401
14.353	17.720	15.033	14.900	17.000
14.663	14.799	14.933	14.933	14.933
14.900	17.664	14.799	14.866	16.156
16.031	15.100	14.629	21.260	14.731
14.765	14.697	17.720	14.560	14.967
15.033	16.462	14.967	14.697	14.933
14.933	14.967	14.967	17.292	17.029
14.799	14.967	14.697	14.832	16.553
15.000	14.526	14.765	14.866	14.457
14.967	14.866	14.799	14.765	14.765
14.933	14.629	14.832	14.900	14.765
14.832	14.731	14.765	14.526	14.629
14.832	14.629	14.283	14.832	15.000
14.832	14.697	15.000	14.799	14.933
15.166	14.967	15.000	15.000	15.297
14.900	15.362	14.697	14.765	14.866
15.166	14.663	14.595	15.067	15.067
15.264	14.832	14.731	14.629	14.933
14.663	15.297	15.000	14.526	14.933
14.933	14.765	15.067	16.613	14.967
15.000	14.629	17.917	14.595	
14.900	14.663	14.967	15.166	
14.560	15.100	14.629	14.697	
14.731	15.264	14.560	14.933	
14.900	14.038	14.765	15.427	
20.421	14.697	14.697	14.663	
23.833	14.900	16.613	14.765	

*N = 343

RAW SCORES IN COURSE LOAD*

Drop-Out Group

13	16	13	14	15
13	15	13	15	14
15	15	16	13	14
14	15	15	13	16
17	12	15	14	14
16	15	14	17	12
16	12	15	14	16
15	15	14	15	16
15	15	14	16	16
13	15	15	14	14
16	16	16	13	16
15	16	16	15	16
12	16	15	15	15
15	14	15	16	16
15	16	17	16	14
15	14	15	16	15
16	15	15	13	16
16	14	16	16	13
16	15	12	13	16
16	14	16	16	16
14	13	14	15	14
15	12	15	13	16
13	15	15	16	15
14	15	15	16	16
16	12	14	15	15
14	16	15	14	14
15	15	15	13	14
16	13	15	15	14
17	17	12	12	16
14	16	16	16	16
16	14	16	15	16
16	15	16	14	16
13	16	14	13	13
14	16	16	12	14
15	14	16	15	

*N = 174

RAW SCORES IN COURSE LOAD*

Non-Drop-Out Group

15	15	14	16	17	15	16	16	16	16
17	16	16	16	15	16	16	12	16	15
16	14	16	14	18	16	16	16	16	16
15	17	14	16	17	15	14	15	16	16
15	15	16	15	14	15	14	15	15	12
16	15	13	15	16	16	15	16	16	15
12	14	16	16	16	15	17	15	16	15
15	16	17	16	14	14	15	15	14	15
16	14	16	17	15	15	15	14	13	14
15	13	14	16	15	16	16	16	15	14
15	16	16	13	14	16	15	16	16	15
16	15	16	16	13	16	15	16	16	15
16	15	15	15	17	15	15	15	15	12
16	15	17	15	15	15	15	15	16	14
16	13	16	17	15	15	16	16	16	15
17	16	15	16	16	16	15	16	16	16
14	16	16	16	15	13	16	16	14	15
17	16	15	15	17	15	15	15	16	15
14	15	16	17	16	14	16	16	16	16
16	15	16	16	14	15	17	14	16	15
15	14	17	15	15	15	16	16	15	16
15	16	16	14	13	15	16	15	16	16
15	16	15	15	16	15	14	15	16	15
15	15	15	16	15	15	15	16	15	15
16	16	15	16	16	16	16	15	15	15
15	16	13	14	16	13	16	15	16	14
12	16	15	14	16	13	16	16	16	16
15	14	14	17	13	12	16	16	14	16
13	16	13	15	15	14	15	15	15	
17	14	15	15	14	16	15	12	16	
16	16	16	16	15	15	16	16	14	
16	15	14	15	16	16	15	16	15	
15	17	16	16	16	16	14	15	16	
14	16	16	16	16	12	15	16	16	
15	17	15	15	16	13	15	16	16	

*N = 343

SQUARE ROOT SCORES OF DISTANCE FROM HOME*

Drop-Out Group

6.633	4.000	7.550	7.550	5.657
9.539	5.099	6.481	4.472	4.472
.000	4.000	4.472	5.657	10.817
.000	.000	2.828	7.550	4.472
.000	.000	.000	.000	8.062
11.747	5.099	5.099	4.472	4.123
7.550	5.657	7.071	10.198	6.633
7.211	3.873	5.657	9.434	4.472
7.280	5.099	6.000	11.489	4.000
8.888	.000	6.708	.000	.000
8.485	5.385	6.481	21.610	7.810
4.583	5.000	9.539	6.633	5.916
6.481	4.123	5.099	11.225	10.583
16.643	4.690	1.414	10.344	8.485
.000	.000	8.185	.000	1.414
.000	4.000	5.292	8.888	6.633
6.481	5.000	3.464	7.071	3.162
7.550	11.662	5.385	4.472	8.944
7.550	.000	9.539	.000	3.464
.000	.000	9.849	.000	1.732
7.483	8.888	8.485	3.162	4.243
16.643	5.657	9.644	5.916	2.236
3.464	.000	8.485	4.472	5.099
7.550	.000	7.280	11.489	2.450
5.099	.000	4.123	.000	2.646
.000	9.950	5.916	10.724	8.185
14.318	6.708	6.557	4.123	5.099
7.280	8.485	5.000	3.162	8.944
8.185	5.385	15.556	8.185	5.385
.000	.000	7.280	.000	8.888
5.657	7.141	7.483	4.472	5.657
4.123	5.099	12.369	4.243	6.633
5.099	3.606	7.550	3.873	7.211
.000	7.550	.000	3.873	.000
.000	.000	.000	7.141	

*N = 174

SQUARE ROOT SCORES OF DISTANCE FROM HOME

Non-Drop-Out Group

4.472	8.485	9.220	5.657	4.472
4.359	6.633	9.434	4.690	8.485
5.657	4.000	7.071	.000	5.099
6.403	8.062	.000	.000	.000
.000	.000	.000	.000	.000
5.099	5.099	8.944	5.099	8.185
3.742	6.633	5.657	5.385	4.000
7.810	1.000	7.416	3.317	8.718
5.099	10.724	8.246	4.000	.000
.000	5.657	.000	7.550	.000
5.099	5.657	5.657	4.472	5.916
7.071	6.245	5.099	5.099	8.944
7.071	4.000	5.099	12.124	6.481
7.681	.000	.000	7.071	8.944
.000	.000	.000	.000	.000
16.793	5.099	8.718	5.099	8.718
6.708	16.000	7.810	5.099	5.657
8.944	4.690	4.690	10.724	5.657
8.485	10.440	7.280	3.606	.000
.000	.000	.000	9.434	.000
7.550	8.485	12.369	5.000	9.644
14.036	5.385	7.280	4.243	5.916
6.403	5.916	7.810	11.000	4.123
2.450	8.888	.000	4.000	12.288
3.317	.000	.000	.000	5.099
10.440	3.606	5.916	7.810	5.099
2.236	11.489	12.288	8.485	3.000
8.246	5.657	.000	7.071	4.123
8.385	5.916	.000	8.485	12.369
.000	.000	.000	.000	7.349
8.246	3.317	8.888	6.928	10.100
9.434	10.100	3.873	8.660	4.000
4.472	5.000	6.333	6.481	8.124
8.944	.000	6.708	13.191	4.472
17.321	.000	4.472	.000	.000

(Non-Drop-Out Distance from Home Scores Continued)*

10.198	10.296	5.099	7.550	3.742
8.944	3.000	12.728	8.367	3.742
6.481	.000	4.472	3.472	4.000
8.602	.000	11.576	8.185	7.211
.000	.000	.000	.000	.000
10.724	7.550	3.873	5.099	3.317
5.099	6.928	8.367	5.916	7.550
10.536	4.472	7.211	2.828	.000
.000	5.000	7.071	5.099	.000
.000	8.944	13.602	.000	.000
13.191	9.434	9.434	5.385	5.099
8.485	3.873	10.440	4.472	7.280
4.472	6.928	5.916	7.483	4.000
6.708	4.899	6.481	5.099	4.472
.000	.000	7.550	8.185	.000
3.742	1.000	5.657	5.916	4.000
8.246	10.817	8.944	7.550	5.099
7.211	7.211	8.888	2.646	5.000
5.099	.000	.000	.000	8.888
.000	.000	.000	.000	12.124
6.481	7.810	8.307	9.434	12.124
3.873	1.414	11.705	7.550	6.403
4.000	8.485	10.817	7.483	8.485
4.472	8.485	7.810	11.705	5.916
.000	5.099	.000	.000	.000
5.657	3.000	7.211	7.280	6.928
4.472	7.280	2.646	9.644	1.414
7.071	15.556	4.472	3.464	5.916
9.644	4.472	9.434	4.899	
.000	4.472	.000	4.899	
4.472	2.450	4.583	3.464	
4.583	5.916	5.099	2.236	
5.385	8.660	8.124	5.385	
.000	5.385	2.828	8.185	
.000	.000	6.928	7.071	

*N = 343

RAW SCORES IN ENGLISH*

Drop-Out Group

88	65	66	104	116
43	111	65	50	76
82	66	112	47	39
94	88	115	86	81
89	63	51	74	73
92	83	50	79	100
40	115	72	71	110
139	67	73	74	89
66	73	83	111	97
50	97	101	76	54
67	107	70	62	98
89	121	93	73	86
47	78	77	65	120
85	74	80	85	93
83	96	59	93	75
60	86	79	96	84
109	89	91	108	113
60	80	104	119	58
43	77	85	78	71
67	44	98	94	84
87	89	57	81	71
85	84	68	84	65
126	99	45	96	95
69	69	82	65	76
99	108	90	70	77
87	67	69	131	77
53	119	83	75	125
79	89	72	92	76
72	79	72	84	80
87	106	91	85	98
88	67	104	89	79
81	59	76	85	111
78	79	92	77	87
88	81	88	80	66
66	57	98	105	

*N = 174

RAW SCORES IN ENGLISH*

Non-Drop-Out Group

127	67	79	112	99	53	98	90	77	75
56	78	74	84	66	69	83	79	93	113
81	85	99	63	84	96	48	78	94	69
104	105	130	72	87	95	108	78	78	59
93	63	75	71	80	98	67	80	75	84
104	37	69	54	79	82	84	84	60	116
71	54	67	56	103	70	58	89	86	117
86	128	107	78	81	45	89	73	68	78
74	81	88	84	91	104	61	73	114	104
67	78	90	105	67	74	96	72	73	99
65	98	79	96	67	93	47	120	92	81
85	85	70	37	83	75	66	78	102	101
86	75	105	61	46	92	78	80	105	84
87	59	91	74	39	79	94	80	72	72
77	99	94	82	86	78	84	79	78	92
85	95	59	85	115	82	100	62	105	72
89	108	71	68	47	73	94	96	76	86
47	84	83	103	78	77	65	94	106	87
72	98	104	92	74	74	78	69	97	128
83	81	74	75	84	92	76	85	76	109
53	112	109	51	81	66	67	126	112	72
69	88	86	72	72	102	85	78	99	45
76	55	66	91	99	77	85	73	91	74
84	114	48	87	76	83	107	104	81	91
87	85	61	71	44	67	108	84	97	77
78	102	95	69	113	45	85	77	94	63
88	88	89	86	87	65	53	100	88	75
82	84	102	70	78	83	89	62	89	86
73	73	83	101	75	84	69	93	72	
93	82	82	87	65	82	87	65	98	
70	89	116	51	117	96	60	99	90	
81	75	83	71	80	105	102	112	87	
108	82	82	77	111	103	108	80	64	
85	107	85	107	77	78	71	103	110	
110	87	71	69	72	51	86	77	104	

*N = 343

RAW SCORES IN INTELLIGENCE*

Drop-Out Group

104	99	89	107	117
99	120	104	100	97
103	99	116	91	74
120	97	114	93	98
104	84	95	98	79
102	105	97	104	122
94	105	105	104	125
127	108	86	108	100
99	106	92	114	99
81	114	118	97	106
96	116	91	100	109
120	113	100	100	119
96	109	110	96	120
102	110	95	117	109
113	108	96	113	96
101	106	104	121	107
121	99	105	119	103
88	104	123	106	95
100	107	93	95	106
89	93	111	116	93
101	100	80	94	103
89	101	100	104	91
129	104	90	114	103
99	90	121	102	101
108	105	120	102	109
94	123	89	124	113
97	124	107	101	128
104	109	101	91	100
95	98	115	100	125
102	107	110	99	99
121	116	118	98	114
107	86	105	100	111
117	102	112	97	114
101	101	111	96	82
105	115	119	130	

*N = 174

RAW SCORES IN INTELLIGENCE**

Non-Drop-Out Group

122	108	104	115	113	81	116	102	102	94
105	110	106	98	102	112	103	92	98	106
101	106	111	96	123	116	99	96	119	95
122	124	107	115	108	112	93	92	91	92
116	100	107	96	107	120	99	98	111	96
108	111	97	105	117	115	110	111	87	121
101	94	102	110	105	109	99	101	104	119
117	133	109	115	93	98	112	81	100	108
116	103	111	112	121	118	83	105	113	110
94	104	104	112	104	97	115	102	95	113
86	110	91	106	111	113	91	114	111	97
101	103	119	69	108	114	94	118	106	109
106	94	107	119	103	112	108	108	115	92
104	72	112	101	105	114	118	108	88	104
103	118	107	108	109	95	99	117	118	120
121	111	102	94	114	102	117	99	114	84
108	119	94	101	103	122	109	109	107	109
107	91	86	120	122	111	107	122	109	95
103	106	102	111	109	89	113	101	105	115
103	105	100	115	110	109	99	109	108	102
102	115	122	80	105	88	108	119	122	96
117	112	106	114	104	116	109	95	98	86
108	96	91	91	98	96	96	98	118	113
105	125	106	114	116	100	121	112	106	102
101	107	107	98	87	101	118	117	112	98
106	108	96	89	113	74	119	99	114	86
113	104	106	98	103	97	104	106	104	106
107	107	118	108	103	102	112	91	106	109
96	89	102	116	110	95	112	104	114	
130	95	117	96	88	95	119	106	119	
93	106	113	107	127	111	100	119	112	
116	113	112	100	122	105	103	120	101	
121	106	106	106	121	114	116	112	96	
112	121	109	110	101	108	102	99	129	
117	104	103	106	105	94	103	105	113	

**N = 343

RAW SCORES OF READING PLACEMENT TESTS (1950-53)*

Drop-Out Group

83	94	99	17	74
35	83	95	25	77
54	74	62	27	60
111	59	68	92	42
77	78	77	74	59
51	47	70	28	55
11	82	27	73	33
85	29	52	46	79
46	55	42	69	42
45	34	58	84	67
42	71	53	91	81
94	66	73	62	57
49	38	45	102	42
64	67	90	60	35
97	77	27	46	45
47	94	65	71	38
84	90	73	48	52
16	61	49	33	33
12	56	38	49	44
25	59	86	64	130
41	57	66	58	56
31	47	62	49	53
96	71	57	111	23
54	53	31	77	62
57	29	61	56	34
58	74	69	38	15
26	60	47	27	
68	64	111	38	
66	29	61	85	
52	72	78	77	

*N = 146

RAW SCORES OF READING PLACEMENT TESTS (1950-53)*

Non-Drop-Out Group

119	79	54	85	44	34	67	50
53	67	44	52	51	83	46	51
55	58	58	45	73	83	34	50
40	46	90	75	51	68	58	
53	47	54	40	29	87	45	
88	58	38	44	69	80	81	
48	22	78	54	77	67	43	
41	115	90	47	31	86	61	
69	92	67	62	56	100	33	
22	83	58	79	66	63	69	
43	71	28	76	88	65	55	
76	48	83	23	56	67	39	
62	37	68	60	54	68	78	
56	19	58	37	49	80	112	
47	87	71	56	63	32	13	
67	62	25	32	86	83	59	
69	77	39	74	43	75	74	
72	71	55	90	89	33	48	
50	63	82	52	45	31	71	
59	57	51	65	42	40	45	
48	81	75	36	37	46	49	
49	58	76	21	59	77	54	
63	67	31	88	49	32	44	
73	103	51	64	47	51	68	
47	74	43	38	29	52	96	
46	82	61	42	131	13	53	
82	82	54	40	73	62	61	
58	59	118	73	65	67	77	
43	38	42	98	71	31	43	
100	60	102	55	37	54	118	
47	66	64	60	103	73	44	
105	65	80	35	82	71	45	
55	55	90	69	75	88	69	
63	111	78	101	42	44	37	
97	30	39	66	56	19	48	

*N = 248

SQUARE ROOT SCORES OF READING PLACEMENT TESTS (1954)

Drop-Out Group*Non-Drop-Out Group**

5.196	5.916	7.810	8.832
7.211	6.245	7.874	8.888
7.211	6.245	7.874	8.888
7.280	6.325	8.000	8.888
7.550	6.325	8.124	8.888
7.550	6.481	8.185	8.944
7.616	6.557	8.246	9.000
7.937	6.633	8.246	9.000
8.062	6.708	8.246	9.055
8.062	6.928	8.246	8.944
8.124	7.000	8.307	9.055
8.124	7.071	8.307	9.055
8.124	7.141	8.426	9.055
8.185	7.211	8.485	9.055
8.307	7.211	8.544	9.110
8.307	7.211	8.544	9.165
8.307	7.280	8.544	9.220
8.367	7.348	8.544	9.274
8.426	7.348	8.602	9.327
8.426	7.348	8.602	9.327
8.602	7.348	8.602	9.381
8.718	7.416	8.602	9.381
8.944	7.416	8.660	8.487
9.000	7.416	8.660	9.592
8.110	7.416	8.660	9.849
9.274	7.483	8.660	
9.381	7.550	8.660	
9.487	7.616	8.718	
	7.616	8.718	
	7.616	8.718	
	7.616	8.775	
	7.746	8.775	
	7.746	8.775	
	7.746	8.832	
	7.746	8.832	

*N = 28

**N = 95