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A comparison of selected factors relating to college success

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A COMPARISON OF SELECTED FACTORS RELATING TO COLLEGE SUCCESS

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CHAPTER I

INTRODUCTION

This study dealt with factors selected to be investigated for their relationships with type of college attended, first year college grades, college transfer/non-transfer during the first year of college and college graduation/non-graduation. The subjects of the study were the 1960-1964 (inclusive) graduates of a certain Henrico County high school who attended college.

I. THE STATEMENT OF THE PROBLEM

The problem of the investigation was as follows:

Several problems were studied in this investigation. One was to determine the correlation between high school academic achievement and College Board SAT scores related to the college or type of college (i.e. junior or senior college) selected for attendance by the students of a certain Henrico County high school. The idea of junior and two-year community colleges to help accommodate the large number of students who would like to attend college is in the educational news. It would be desirable to know whether there was a variation between the population of students who attended junior or two-year colleges as compared with those who attended senior or four-year colleges. Included was an investigation as to how many schools the student applied and by how many he was accepted or rejected. Another facet of the investigation dealt with

how successful, academically, these students were in their first year of college as compared with their academic success in high school and scores on the College Board SAT. In addition, the incidence of college transfer during or immediately after the first year of college and/or the earning of a degree or associate degree was studied.

II. THE DEFINITION OF THE PROBLEM

The definition of the problem included an explanation of (a) the terms used in the study, (b) the delimitations of the research, and (c) the assumptions inherent in the study.

Definitions of terms. The definitions of terms used in the research study were as follows:

The term graduate in this study was used to designate students who have graduated from the Henrico County high school under investigation.

The term college was used to include both four-year and junior colleges and excluded commercial business colleges.

The terms associate degree or associate certificate were used to mean that degree or certificate awarded upon completion of a program in a junior college or special program of study in a four-year college.

Delimitations of the research. The study was concerned with the graduates of the years 1960 through 1964, inclusive, from a certain Henrico County high school who entered either a four-year or a junior college.

The types of information studied included the permanent high school record of each of the graduates who entered college. These records contained the date of high school graduation, high school grade point average, colleges to which application was made, and College Entrance Examination Board SAT scores, if available. From the records of the guidance counselors in the high school, certain data were obtained pertaining to which college a student applied for admission and whether he was accepted, as well as college reports of first year college grades. Some of this information was available from the graduates or their parents, which was obtained by telephone call or a mailed questionnaire. (Appendix A) From this latter source, information was secured as to where the student applied for college entrance and whether he was accepted, where he attended college and for how long, whether required courses for college entrance were lacking, and whether a degree was earned. Some graduates who attended college could not be located and were not included in the sample. It was the goal of the researcher to include at least sixty per cent of those graduates who attended college to insure reliability and validity. Eighty-one per cent could be located and used in the sample, although not each graduate could be used for each statistic as some information was not available.

College registrars cooperated in some instances by supplying records of academic achievement, College Board SAT scores, and dates of attendance. However, for some graduates this information was impossible

to obtain.

The assumptions inherent in the study. By examining relevant information about graduates of a certain Henrico County high school who entered college over a five-year period, it was determined how well the presumed relations could be used to indicate potentiality.

As college grades, for the most part, were available for only the first year, supposed predictability of college success would be limited to the first year. The same situation existed with the college transfer information. Obtaining the first year college grades from the transcript or the registrar would allow valid comparisons with high school achievement and College Board SAT scores obtained from the high school permanent records.

Information about graduation from a four-year college or university would be available for only two classes which would limit the capability to show a trend. However, information pertaining to graduation from a junior college was included for four classes which could show a possible trend.

Determination of the number of colleges to which a student applied, by how many each was accepted and by how many each was rejected would establish success of entry into colleges by graduates in this sample. A preference of college was not requested.

III. AN EVALUATION OF THE STUDY

The evaluation of the study was made in terms of statements

concerning (a) the need and value of the investigation and (b) the objectives of the investigation.

The need and value of the study. In recent years there has been an increasing interest on the part of junior and senior high school students and their families in planning to apply for admission to colleges. A responsibility of guidance counselors in secondary schools is to help students to be realistic in considering application to college. Due to the publicity given crowded college conditions, there is a fear on the part of students that they may not be accepted into college. It would be desirable to know how successful the graduates have been in gaining admission to colleges in order to be of most assistance. This should be considered with respect to their high school academic achievement, College Board SAT scores, and how well they have succeeded once enrolled in college.

By becoming apprized of the relation of these two factors - high school academic achievement and College Board SAT scores - to success in gaining entrance into college, incidence of transfer, and/or graduation, the guidance counselor will be better prepared to provide information upon which students of this high school, the "feeder" junior high school, and their parents may base decisions concerning application for higher education.

The objectives of the study. It was an objective of this study to determine the amount of multiple college application, rejection

and acceptance experienced by a student. Any trend in the applications to junior or senior colleges, and the extent of acceptance and rejection by junior and senior colleges, was investigated. In addition, the types of courses in which applicants were deficient according to entrance requirements were studied.

With an increased interest in junior colleges, it would be of value to note whether there were significant differences in high school grade point average, College Board SAT scores, and first year college grade point average for students who attended a junior college as opposed to those who attended a senior college.

Another group of objectives centered on the relationship of college grades with other indicators. High school grades were compared with College Board SAT scores; high school grades and College Board SAT scores were correlated with first year college grades.

Studies were conducted to determine relationships of transferring students as opposed to non-transferring students during or immediately after the first year of college as compared with possible indicators. Transfers were compared for high school grades, attendance at either a junior or a senior college, and College Board SAT scores.

Graduation or non-graduation from college was compared with high school grades and College Board SAT scores for any significant correlations.

By knowing what graduates have experienced in college, counseling of college applicants or aspirants could be based on factual rather than assumed information.

IV. RELATED RESEARCH STUDIED

Paul Centi reported a study conducted using sixty-four full-time college students during 1955-56.[1] Thirty-two (eight from each class) were the highest ranking and thirty-two (eight from each class) were the lowest ranking in their classes. The subjects were chosen on the basis of the first semester grade point average. Each was given the California Test of Mental Maturity and the Cooperative English Test, Form Y. The results of the California Test were as follows:[2]

	Mean IQ	Language IQ	Non-Language IQ
High Group	124	139	112
Low Group	107	118	99

Similar results were found on the memory, spatial relations, logical reasoning, numerical reasoning and verbal concepts scores as were likewise found on the Cooperative English Test.

The College Entrance Examination Board conducted a study on 375 students of Richmond College. This was copyrighted in 1964. The criterion was freshman grade point average and the predictors being tested were high school rank, SAT verbal and SAT math scores. The high school rank produced a .474 correlation with the criterion, the SAT

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[1]Paul Centi, "Intellective and Language Factors Related to College Success," Peabody Journal of Education, XL (September, 1962), p. 102.

[2]Ibid.

verbal produced a .257 correlation and the SAT math produced a .266 correlation.[3]

A summary of results of a number of studies of the predictive validity of high school rank, SAT verbal and SAT math scores made at various colleges is shown in Table I.[4] In nearly every instance, the high school rank correlated more highly with freshman grade point averages than did scores on the SAT.

In conducting the correlation studies summarized in Table I, the multiple correlation coefficients obtained using a combination of rank in high school class, SAT verbal score and SAT mathematical score were computed. These multiple correlation coefficients are summarized in Table II[5] for the same groupings. The correlations seemed to be more significant for the higher groups than for the lower.

> The extent to which tests and high school records contribute to the accurate estimation of eventual college performance is referred to as their predictive ability. If a measure has some validity for the prediction of later performance, then knowledge of a student's relative standing on the predictor provides an estimate of his subsequent standing on the criterion.[6]

In actual practice, the correlation coefficient between freshman grades and other measures will always be somewhat less than 1.00 for a

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[3]College Entrance Examination Board Validity Study Service, Data Analysis and Interpretation, p. C25.

[4]Ibid., p. 10.

[5]Ibid., p. 12.

[6]Ibid., p. 1.

TABLE I

SUMMARY OF CORRELATION COEFFICIENTS OBTAINED IN STUDIES OF THE PREDICTIVE VALIDITY OF RANK IN HIGH SCHOOL CLASS AND SAT SCORES

	Class of Students*				
	a	b	c	d	e
Groups	26	38	11	10	9
SAT Verbal					
High	.50	.66	.56	.40	.47
Median	.33	.50	.45	.29	.34
Low	.14	.18	.22	.05	.18
SAT Math					
High	.51	.60	.54	.50	.53
Median	.36	.43	.32	.35	.38
Low	.15	.11	.29	.10	.20
H. S. Rank					
High	.69	.73	.73	.65	.67
Median	.50	.56	.54	.41	.55
Low	.28	.29	.37	.19	.39

*Class of Students: (a) Liberal Arts Men, (b) Liberal Arts Women, (c) Liberal Arts Co-Educational, (d) Engineering and Science Men, (e) Others Men.

TABLE II

SUMMARY OF MULTIPLE CORRELATION COEFFICIENTS OBTAINED IN STUDIES OF THE PREDICTIVE VALIDITY OF HIGH SCHOOL RANK IN CLASS AND SAT SCORES

Class of Students	Groups	Multiple Correlation Coefficients		
		High	Median	Low
Liberal Arts Men	26	.72	.56	.40
Liberal Arts Women	38	.80	.68	.41
Liberal Arts Coed.	11	.77	.63	.47
Engr. & Science Men	10	.69	.54	.27
Others - Men	9	.70	.59	.45

variety of reasons. For one thing, freshman grades obviously are influenced by factors beyond the abilities and achievement indicated by test scores and high school grades. Also, test scores and grades (both high school and college) are imperfect measures of a student's aptitude and achievement. The obtained correlation coefficients are usually determined from data on enrolled students who have been selected for admission to a particular college on the basis of a large number of decisions by the student, the high school, and the college. The obtained correlation coefficient will underestimate the validity of the predictor when applied to unselected applicants.

According to an article in The Personnel and Guidance Journal, there was a trend, though not new, toward a greater emphasis on non-intellectual predictors of academic success.

> A common logical, though not statistical, approach is to assume that a minimum amount of scholastic aptitude is necessary for academic success but above this minimum, success is determined by non-intellectual variables.[7]

Another trend was the realization that different student characteristics and abilities were predictive of success in different settings as the standards varied from college to college. In the study reported, two hundred and one high-ability freshman men - 76 Science and Humanities students and 125 Engineering students - of the same University were used to determine what characteristics were rewarded. The results were conclusive in showing that different student behaviors

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[7]Frederick G. Brown, "Correlates of Academic Success for High-Ability Freshman Men," The Personnel and Guidance Journal, XLII (February, 1964), p. 603.

and characteristics were rewarded in colleges with different curricular emphases - even within the same University. Biographical and study habits data were effective predictors and these items asked directly of the student were definitely more successful than the more subtle personality scales.

Little information could be found in literature on studies relating to this topic. What was here reported indicated that there was a difference between high achieving college students and low achieving college students in terms of prediction factors - IQ, high school rank and SAT scores. Also, the academic success within colleges having different curricular emphases could be predicted from different behaviors, characteristics, biographical and study habits data.

CHAPTER II

DESCRIPTION OF THE STUDY

The procedures, methods, techniques, and instruments used in this study, A Comparison of Selected Factors Relating to College Success, are included in this chapter.

It was first necessary to determine which of the 1960-64 (inclusive) graduates of the designated high school entered college and would, therefore, be included as possible subjects in the study. A survey of the high school permanent records was made to determine which members of the five graduating classes entered college. In addition, records kept by the guidance director were used to assist in establishing which of the graduates were to be included in the study by virtue of college attendance.

The grade point average for high school was obtained for each of the graduates from either the high school permanent record or the records of the guidance director. Grades of all courses taken in eighth grade through the first semester of the twelfth grade were utilized in computing this average.

College Board SAT scores were obtained from the high school permanent record or from the transcript of college grades. Such scores were not available for all graduates due either to incomplete high school records or graduates not having taken the test. Those graduates for whom scores were unavailable were retained in the sample for the other

available information.

College grades for the freshman year only were considered in the study as those were the grades most available. Of course, this fact limited the usefulness of this portion of the study to the first year of college. College grades were requested from the college registrars by letter (Appendix B) and from transcripts which had been sent to the high school director of guidance by the college. As with the College Board SAT scores, college grades were not available for all graduates. College grades were equated to the 4.0 scale for convenience in making comparisons. All first year college grades for a student were averaged for use in the study. It is realized that grading and academic standards vary from college to college.

A survey questionnaire as shown in Appendix A was used to obtain data for the descriptive analysis of this study. The questionnaire was used for the information not available in the high school records. This questionnaire and its cover letter were devised by the investigator and submitted to authorities for criticism. After revision of items in view of suggestions received, the letter, questionnaire and return envelope were mailed to those graduates who were not contacted personally. This was to determine (1) to which colleges the graduates had applied and whether they were accepted or rejected; (2) what colleges they attended; (3) whether they transferred after or during their first year of college; (4) whether they earned a degree or associate degree;

and (5) what, if any, courses they lacked for college entrance requirements. Through means of personal contact either by telephone or the questionnaire, eighty-one per cent of the students who went to college from the high school being studied and from the graduating classes designated were contacted for this information.

A data sheet (Appendix C) was used for each graduate in recording data obtained from high school permanent records, guidance director's files, and from the survey questionnaire or personal contact.

Information as to college attended, whether the graduate transferred from the college during or immediately after the first year, whether a degree or associate degree was received and from what college, results of the College Board SAT and high school grade point average were punched into an electronic data processing card for each graduate. This was done in preparation for use of the data processing equipment to determine the relevant statistics in this study.

The colleges to which graduates applied, acceptance or rejection by the college, and course deficiencies were tabulated manually. This same method was utilized to determine the means of college grade point averages.

CHAPTER III

FINDINGS

The findings of this investigation, A Comparison of Selected Factors Relating to College Success, are included in this chapter. The findings were organized into the characteristics of the sample used, applications to colleges, college grades for the first year, differences between graduates attending a junior or a senior college, characteristics of college students who transferred during or immediately after the first year and college graduates compared with non-graduates.

I. THE SAMPLE USED

The number of high school graduates for each year from 1960 through 1964, as seen in Table III, was obtained from the records of the guidance department of the high school. The number enrolled in college was taken from the most recent records available through follow-up study done by the guidance department. The sample used was the result of response to the previously mentioned questionnaire and contact by means of the telephone; the sample represented eighty-one per cent of the 807 graduates who enrolled in college. The total number of graduates who enrolled in a college, eight hundred and seven, represented 52.6% of the 1532 graduates over the five-year period under study. The graduates attended sixty different four-year colleges and fifteen different junior colleges.

TABLE III

SAMPLE USED

Year	Sample Used	College Enrollees	H.S. Graduates
1960	90	111	223
1961	111	153	287
1962	120	138	288
1963	153	197	356
1964	181	208	378
Totals	655	807	1532

High school grades compared with College Board SAT scores. A correlation of high school grade point averages and verbal scores on the College Board SAT (Figure 1) revealed a moderate correlation and substantial relationship. The biserial correlation was used for this item and it revealed a .51 relationship. The mean high school grade point average of the sample (89.23) was used. Use of the same statistic to correlate SAT math scores with high school grade point average indicated a .376 correlation, which was low, but showed a definite, small relationship between scores on the College Board SAT and grades in high school.

II. APPLICATIONS TO COLLEGES

Information for Table IV, which shows the applications to college by students used in the sample, was based on the records of the guidance director and responses to the questionnaire and telephone contact. The tables showing applications, acceptances and rejections were based on the sample only and did not include students who may not have attended college, although they applied and were either accepted or rejected.

The percentage of rejections received in relation to total senior college applications changed very little over the five-year period. In 1960, of the applications sent to colleges by graduates in the sample, seven per cent were rejected; the highest percentage of applications rejected was 15.5% of the applications sent in 1963. The percentage of rejections received by applicants to junior colleges was very slight;

$$r_b = \frac{M_p - M_t}{\sigma t} \times \frac{p}{y}$$

$$r_b = \frac{491.5 - 454.4}{100.4} \times \frac{.55}{.3958}$$

$$r_b = .51$$

College Board SAT Verbal Scores

$$r_b = \frac{M_p - M_t}{\sigma t} \times \frac{p}{y}$$

$$r_b = \frac{523.6 - 497.1}{97.8} \times \frac{.55}{.3958}$$

$$r_b = .38$$

College Board SAT Math scores

N = 574

FIGURE 1

CORRELATION OF HIGH SCHOOL GRADES WITH
COLLEGE BOARD SAT SCORES

TABLE IV

APPLICANTS TO SENIOR AND JUNIOR COLLEGES BY YEARS

Senior College	1960	1961	1962	1963	1964	Total
*Applications	131	180	205	289	241	1045
*Acceptances	121	160	179	244	204	908
*Rejections	10	20	25	45	37	137
Attended	84	98	92	121	136	531
Junior College						
*Applications	6	19	35	46	57	163
*Acceptances	6	16	32	44	55	153
*Rejections	-	3	3	2	2	10
Attended	6	13	28	32	45	124

*May include a student more than one time.

it ranged from none in 1960 to a maximum of three rejections in 1961 which represented 15.7% of the applications that year to a junior college.

The percentage of applications to junior colleges increased from 4.3% of the 1960 graduates' applications to 19.2% of the 1964 graduates' applications. The percentage of graduates in the sample attending junior college increased from 7% in 1960 to almost 25% in 1964.

Table V shows that in 1961, 1962 and 1963, there were more graduates who applied to more than one college than those who applied to only one college. However, this was not the case in either 1960 or 1964. There was a noticeable increase in the number of graduates who applied to only one college from 1963 to 1964. Relatively few students made more than three applications, although for the entire sample more students made multiple applications than single application.

Table VI indicates the number of schools by which graduates in the sample were accepted. In 1962 and 1963, more than 50% of the graduates were accepted by more than one college. This was not so high for the other years. As would be expected by the sharp increase in applications in 1964 to only one college, the acceptances by one college were similarly increased.

Table VII indicates the number of colleges by which graduates in the sample were rejected. More than 85% of the graduates in the sample were not rejected by any college, and few were rejected by more than one college.

Table VIII enumerates the courses in which students were deficient

TABLE V

NUMBER OF COLLEGES TO WHICH GRADUATES APPLIED

Colleges	Year of Graduation					Total Graduates
	1960	1961	1962	1963	1964	
1	58	58	47	51	100	314
2	25	35	42	47	54	203
3	3	9	18	39	21	90
4	1	4	10	10	3	28
5	2	3	3	3	3	14
6	1	1	-	3	-	5
7	-	1	-	-	-	1
Total	90	111	120	153	181	655

TABLE VI

NUMBER OF COLLEGES BY WHICH GRADUATES WERE ACCEPTED

Colleges	Year of Graduation					Total Graduates
	1960	1961	1962	1963	1964	
1	63	66	59	64	120	372
2	22	33	39	54	48	196
3	2	7	15	28	10	62
4	1	3	6	4	2	16
5	2	1	1	2	1	7
6	-	1	-	1	-	2
Total	90	111	120	153	181	655

TABLE VII

NUMBER OF COLLEGES BY WHICH GRADUATES WERE REJECTED

Colleges	Year of Graduation					Total Graduates
	1960	1961	1962	1963	1964	
0	84	99	100	122	156	561
1	3	6	13	19	14	55
2	2	3	6	9	8	28
3	1	2	1	2	3	9
4	-	-	-	1	-	1
5	-	1	-	-	-	1
Total	90	111	120	153	181	655

according to college entrance requirements, but these courses did not prevent admission to college. The number of course deficiencies did not seem to indicate a trend or a pattern. The mathematics deficiency was more outstanding than any of the others, with twenty-nine graduates being deficient, while there were thirteen students deficient in each of the subjects English and foreign languages. Only four students were deficient in science. This item of information was obtained from the questionnaire and through the telephone contacts.

III. COMPARISONS BETWEEN STUDENTS OF JUNIOR AND SENIOR COLLEGES

High school grades. A biserial correlation (Figure 2) was made with the high school grades of those who attended a junior college as compared with high school grades of those who attended a senior college. The high school grade point average of those 531 graduates who attended a senior college was 90.09, and that of the 124 graduates who attended a junior college was 85.81. The biserial correlation produced a .54 correlation which indicated a moderate correlation and substantial relationship of above average high school grades with attendance at a senior college and lower high school grades with attendance at a junior college.

College Board SAT scores. Figure 3 shows the results of a biserial correlation made to compare College Board SAT scores with attendance at either a junior or a senior college. Of the 469 graduates who attended a senior college for whom the test scores were available,

TABLE VIII

COURSES IN WHICH GRADUATES WERE DEFICIENT

Courses	1960	1961	1962	1963	1964	Total Graduates
Foreign Language	3	3	3	2	2	13
English	4	2	3	3	1	13
Mathematics	8	3	5	9	4	29
Sciences	2	-	-	-	2	4
Total	17	8	11	14	7	59

$$r_b = \frac{M_p - M_t}{\sigma_t} \times \frac{p}{y}$$

$$r_b = \frac{90.90-89.23}{4.31} \times \frac{.81}{.2714}$$

$$r_b = \frac{.78}{4.31} \times \frac{.81}{.2714}$$

$$r_b = .54$$

N = 655

FIGURE 2

CORRELATION OF HIGH SCHOOL GRADES
WITH ENROLLMENT AT A JUNIOR
OR A SENIOR COLLEGE

$$r_b = \frac{M_p - M_t}{\sigma_t} \times \frac{p}{y}$$

$$r_b = \frac{471. - 450.5}{108.4} \times \frac{.81}{.2714}$$

$$r_b = .56$$

College Board SAT Verbal Scores

$$r_b = \frac{M_p - M_t}{\sigma_t} \times \frac{p}{y}$$

$$r_b = \frac{510.9 - 492.8}{107.7} \times \frac{.81}{.2714}$$

$$r_b = .50$$

College Board Math SAT Scores

N = 579

FIGURE 3

CORRELATION OF COLLEGE BOARD SCORES AND ATTENDANCE AT JUNIOR OR SENIOR COLLEGE

the mean verbal score was 471.0 with a standard deviation of 93.5. The mean verbal score of the 110 graduates who attended a junior college and for whom test scores were available was 390.2 with a standard deviation of 81.7. The biserial correlation for the verbal scores comparing junior college and senior college enrollees was .56 which indicated significant correlation and a substantial relationship that graduates with higher verbal scores on the College Board SAT attended a senior college and those with lower verbal scores attended a junior college.

When the biserial correlation was computed to compare College Board SAT math scores with enrollment at either a junior or a senior college, there was found to be a .50 correlation. This showed a moderate correlation and substantial relationship between high College Board SAT math scores and attendance at a senior college and lower scores with attendance at a junior college. The mean College Board SAT math score for the 469 graduates who attended a senior college and for whom scores were available was 510.9; the mean math score for the 110 graduates who attended a junior college and for whom SAT scores were available was 446.4.

First year college achievement. An objective of this study was to determine any significant difference in college academic achievement between those who attended a junior college and those who enrolled in a senior college. A study was made by means of the chi square the results of which are shown in Figure 4. The hypothesis that there was no difference between the graduates attending each of the two types of

College	College Grades: Above 2.0	Below 2.0	Total
Senior	204 (197.7)	40 (46.3)	244
Junior	125 (131.3)	37 (30.7)	162
	329	77	402

O	E	O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
204	197.7	+6.3	39.69	.20
125	131.3	-6.3	39.69	.30
40	46.3	-6.3	39.69	.86
37	30.7	+6.3	39.69	1.29
				$\chi^2 = 2.65$

$p = .10 - .20$

FIGURE 4

ATTENDANCE AT JUNIOR OR SENIOR COLLEGE
COMPARED WITH COLLEGE GRADES

colleges was not entirely rejected.

The grade point average for each of the 402 graduates for whom first year college grades were available was equated to a 4.0 scale. For this statistic, a division between groups at 2.0 was used as it would be expected to approximate the mean of most college grade point averages.

High school grades. A comparison of grades for the first year of college of those graduates for whom both college and high school grades were available was computed by means of chi square. (Figure 5) This revealed a significant difference between the groups. The college grades were divided at 2.0 on a 4.0 basis and the mean of the high school grade point averages for the sample (89.23) was used to divide the high school grade point averages. A significance of beyond the .01 level rejects the hypothesis that there was no difference between the groups; high grades for high school correlated with high first year college grades and conversely, low grades from high school correlated with low college grades.

College Board SAT scores. A study was made comparing College Board SAT scores with college grades for the first year. (Figures 6 and 7) There were 366 graduates for whom both SAT scores and first year college grades were available. The college grades were divided at 2.0 on a 4.0 scale and SAT scores were divided at 500 as this seemed to be taken as a generally accepted average. The significance of chi square was found to be beyond the .01 level in a comparison of freshman college grades

	College Grades		
H. S. Grades	Above 2.0	Below 2.0	Total
Above 89.23	165 (146.2)	72 (90.8)	237
Below 89.23	83 (101.8)	82 (63.2)	165
	248	154	402

O	E	O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
165	146.2	+18.8	353.44	2.41
72	90.8	-18.8	353.44	3.89
183	101.8	-18.8	353.44	3.47
82	63.2	+18.8	353.44	5.59
			X^2 =	15.36

p = .01

FIGURE 5

COLLEGE GRADES COMPARED WITH HIGH SCHOOL GRADES

	College Grades		
SAT Scores	Above 2.0	Below 2.0	Total
Above 500	93 (72.7)	28 (48.3)	121
Below 500	127(147.3)	118 (97.7)	245
	220	146	366

O	E	O-E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
93	72.7	+20.3	412.09	5.6
127	147.3	-20.3	412.09	2.7
28	48.3	-20.3	412.09	8.5
118	97.7	+20.3	412.09	4.2
			X^2 =	21.0

p = .01

FIGURE 6

COLLEGE BOARD VERBAL SAT SCORES COMPARED WITH FIRST YEAR COLLEGE GRADES

	College Grades		
SAT Math Scores	Above 2.0	Below 2.0	Total
Above 500	128 (115.4)	64 (76.6)	192
Below 500	92 (104.6)	82 (69.4)	174
	220	146	366

O	E	(O - E)	$(O - E)^2$	$\frac{(O - E)^2}{E}$
128	115.4	+12.6	158.76	1.4
92	104.6	-12.6	158.76	1.5
64	76.6	-12.6	158.76	2.1
82	69.4	+12.6	158.76	2.3
			X^2 =	7.3

p = .01

FIGURE 7

COLLEGE BOARD MATH SAT SCORES COMPARED WITH FIRST YEAR COLLEGE GRADES

with each of the math and the verbal College Board SAT scores. There was a very significant difference between the groups which indicated that high SAT scores for both math and verbal sections would correlate with high first year college grades and vice versa.

IV. COLLEGE TRANSFERS

Table IX shows the number of graduates who transferred from the college first attended either during or immediately following the first year of college and those who did not transfer at that time. This information was obtained directly from the graduates, from the college attended, or from the guidance records in the high school. Thus, information was available for 576 graduates.

Junior or senior college. A comparison by means of chi square (Figure 8) was made for those who transferred and did not transfer during or at the end of the first year of attendance at either a junior or a senior college. The chi square was significant. Thus, junior college students of this sample transferred proportionately more than did senior college students.

High school grades. When a comparison was obtained by means of the biserial correlation between graduates who transferred and those who did not transfer during or immediately following the first year of college and their respective high school grades, there was found to be a low negative correlation showing a definite but small negative relationship. The negative quality is as would be expected; those who transferred tended to have slightly lower high school grades and those who did not transfer tended to have higher high school grades. (Figure 9)

College Board SAT scores. There were 507 graduates for whom transfer or non-transfer information was available as well as information

TABLE IX

TRANSFERS DURING FIRST YEAR OR IMMEDIATELY THEREAFTER

	1960	1961	1962	1963	1964	Total
Transfer	14	17	29	34	21	115
Non-Transfer	65	84	85	97	130	461
	79	101	114	131	151	576*

*Information was not available for all graduates used in the sample.

College	Transfer	Non-Transfer	Total
Senior	82 (92.6)	382 (371.4)	464
Junior	33 (22.4)	79 (89.6)	112
	115	461	576

O	E	O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
82	92.6	-10.6	112.36	1.21
33	22.4	+10.6	112.36	5.01
382	371.4	+10.6	112.36	.30
79	89.6	-10.6	112.36	1.25
			X^2 =	7.77
			p =	.01

FIGURE 8

COLLEGE TRANSFERS/NON-TRANSFERS COMPARED
WITH ATTENDANCE AT EITHER JUNIOR
OR SENIOR COLLEGE

$$r_b = \frac{M_p - M_t}{\sigma_t} \times \frac{p}{y}$$

$$r_b = \frac{87.52 - 89.30}{4.95} \times \frac{.20}{.2800}$$

$$r_b = -.25$$

$$N = 576$$

FIGURE 9

COLLEGE TRANSFERS/NON-TRANSFERS COMPARED
WITH HIGH SCHOOL GRADES

concerning SAT scores. A biserial correlation was computed between graduates who transferred and those who did not to relate each group with both the verbal and math scores of the SAT. In both cases, there was found to be a slight negative relationship. (Figure 10) As in the correlation with high school grades, this negative characteristic might be expected to exist; graduates who transferred during or immediately after the first year of college would be expected to have lower class grades and lower math and verbal SAT scores.

V. COLLEGE GRADUATES

Of the 182 graduates in the sample of the 1960 and 1961 classes who attended a senior college, 93 (60% of the 155 for whom information was available) graduated from a senior college and sixty-two did not graduate. Of the 74 graduates of the years 1960 through 1963, inclusive, who attended a junior college or two-year program in a senior college for whom information was available, 31 (42%) graduated from the junior college or two-year program. (Table X)

High school grades. A chi square study was computed for the 155 graduates of 1960 and 1961 for whom senior college graduation or non-graduation information was available. The objective was to compare high school grade point averages above and below the mean high school grade point average for the entire sample (89.23) and whether the student was graduated from college. There was found to be a .01 - .02 significance, which indicated a definite difference in the high school grades between

$$r_b = \frac{M_p - M_t}{\sigma_t} \times \frac{p}{y}$$

$$r_b = \frac{425.5 - 451.7}{107.7} \times \frac{.20}{.28}$$

$$r_b = -.17$$

College Board SAT Verbal Scores

$$r_b = \frac{M_p - M_t}{\sigma_t} \times \frac{p}{y}$$

$$r_b = \frac{464.0 - 491.0}{108.1} \times \frac{.20}{.28}$$

$$r_b = -.17$$

College Board SAT Math Scores

N = 507

FIGURE 10

COMPARISON OF COLLEGE BOARD SCORES
WITH TRANSFER/NON-TRANSFER

TABLE X

COLLEGE GRADUATES

Senior College[a]	Graduates	Non-Graduates	Attended College
1960	47	20	84
1961	46	42	98
Total	93	62	182
Junior College[b]			
1960	2	3	6
1961	8	4	13
1962	7	18	28
1963	14	18	32
Total	31	43	79

[a]Includes only 1960, 1961 graduates for whom information was available.

[b]Includes 1960 through 1963 graduates for whom information was available.

those who graduated and those who did not graduate from a senior college - the high school grades of senior college graduates being higher than those of non-graduates of senior colleges. (Figure 11)

A chi square study was made to compare graduation or non-graduation from a junior college with the high school grade point average. Information was available for 74 graduates of the 1960-1963 classes, inclusive, who graduated or did not graduate from either a junior college or a two-year program in a senior college. The high school grades were divided at 89.23, the high school grade point average for the sample. The result was that high school grades did not show the same significance for graduation or non-graduation from a junior college as was evidenced by a similar comparison with graduates/non-graduates of a senior college. There was found to be no significant difference between the groups graduating or not graduating from a junior college in terms of high school grades. (Figure 12)

College Board SAT scores. Verbal and math SAT scores were correlated with graduation or non-graduation from a senior college for those 119 graduates for whom senior college graduation/non-graduation information and SAT scores were available. The biserial correlation showed a negligible relationship between both verbal and math SAT scores and graduation or non-graduation from a senior college. This would suggest, for this sample, that the SAT scores were not valid indicators of senior college graduation potential. (Figure 13)

There were 59 graduates for whom SAT scores and information

H. S. Grades	Graduates	Non-Graduates	Total
Above 89.23	50 (42.6)	21 (28.4)	71
Below 89.23	43 (50.4)	41 (33.6)	84
	93	62	155

O	E	O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
50	42.6	+7.4	54.76	1.29
21	28.4	-7.4	54.76	1.92
43	50.4	-7.4	54.76	1.09
41	33.6	+7.4	54.76	1.63
			X^2 =	5.93

$p = (.02 - .01)$

FIGURE 11

HIGH SCHOOL GRADES COMPARED WITH GRADUATION FROM SENIOR COLLEGE

H. S. Grades	Graduates	Non-Graduates	Total
Above 89.25	7 (5.9)	7 (8.1)	14
Below 89.23	24 (25.1)	36 (34.9)	60
	31	43	74

O	E	O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
7	5.9	+1.1	1.21	.21
7	8.1	-1.1	1.21	.15
24	25.1	-1.1	1.21	.05
36	34.9	+1.1	1.21	.03

$X^2 = .44$

$p = .70 - .50$

FIGURE 12

HIGH SCHOOL GRADES COMPARED WITH GRADUATION
FROM JUNIOR COLLEGE

$$r_b = \frac{M_p - M_t}{\sigma_t} \times \frac{p}{y}$$

$$r_b = \frac{499.6 - 494.1}{92.9} \times \frac{.57}{.3928}$$

$$r_b = .09$$

College Board SAT Math Scores

$$r_b = \frac{M_p - M_t}{\sigma_t} \times \frac{p}{y}$$

$$r_b = \frac{465.0 - 457.7}{90.1} \times \frac{.57}{.3928}$$

$$r_b = .12$$

College Board SAT Verbal Scores

N = 119

FIGURE 13

COLLEGE BOARD SAT SCORES COMPARED WITH
GRADUATION/NON-GRADUATION
FROM SENIOR COLLEGE

regarding graduation or non-graduation from a junior college or a two-year senior college program were available. A biserial correlation was computed between both the math and verbal SAT scores and graduation/non-graduation from a junior college or a two-year college program. The correlation with the verbal SAT scores showed a slight, almost negligible relationship (.071) between high SAT scores and graduation from a junior college and low SAT scores and non-graduation from a junior college. However, the correlation obtained using SAT math scores indicated a low correlation (.350) and a definite, but small relationship. (Figure 14)

$$r_b = \frac{M_p - M_t}{\sigma_t} \times \frac{p}{y}$$

$$r_b = \frac{410.3 - 396.8}{74.0} \times \frac{.37}{.3778}$$

$$r_b = .071$$

College Board SAT Verbal Scores

$$r_b = \frac{M_p - M_t}{\sigma_t} \times \frac{p}{y}$$

$$r_b = \frac{475.9 - 448.1}{77.5} \times \frac{.37}{.3776}$$

$$r_b = .350$$

College Board SAT Math Scores

N = 59

FIGURE 14

COLLEGE BOARD SAT SCORES COMPARED WITH
GRADUATION/NON-GRADUATION
FROM JUNIOR COLLEGE

CHAPTER IV

INTERPRETATIONS

On the basis of the findings of this study, the following conclusions appeared to be warranted.

Applications to junior colleges were increasing in greater proportion than those to senior colleges. Multiple applications to colleges by the same student seemed to be increasing, as were acceptances by more than one college. The rejections of applications to junior colleges did not seem to be increasing and those rejected by senior colleges were not increasing to any significant degree. The rejections experienced by the same person did not seem to be increasing more than the increase in proportion of applications.

Applicants to college seemed to be accepted by colleges with more deficiencies in mathematics courses, according to entrance requirements, than in any other subject field. There were only half the number of graduates who were deficient in foreign language and English requirements as compared with those deficient in mathematics. Very few graduates were deficient in science requirements. In relation to the number of graduates used in the sample, few had course deficiencies.

By comparing significance of high school grades and College Board SAT scores for this sample, it was found that there was a substantial relationship between above average high school grades and high SAT verbal scores and vice versa; however, there was found to be a definite

but small relationship between above average high school grades and high SAT math scores and vice versa.

A comparison of graduates who attended a senior college with those who attended a junior college revealed a substantial relationship between above average high school grades and attendance at a senior college and conversely, lower high school grades and attendance at a junior college. There was a similar relationship between higher College Board SAT verbal and math scores with senior college attendance and lower SAT scores with junior college attendance. There was a less significant difference in a comparison between first year college grades of junior college and senior college students. This may be interpreted to indicate that junior colleges are giving a similar distribution of grades as the senior colleges, regardless of any difference in levels of courses.

In determining potential for first year college grades from high school grades and/or College Board SAT scores, it was found that there was definitely a significant difference between those who had higher college grades and those who had lower college grades. Higher SAT verbal and math scores and high school grades indicated potential for better first year college achievement. Conversely, lower SAT scores and high school grades indicated potential for lower first year college achievement.

College transfers seemed to be declining in proportion over the five-year period. There was found to be a significant difference in the

number of transfers from a junior college and a senior college. It might be expected that there would be more transfers from a junior college than from a senior college. High school grades indicated only a very slight possibility of indicating transfer or non-transfer potential; above average high school grades indicated less likelihood of transfer and lower high school grades indicated a greater possibility of transfer. College Board SAT verbal and math scores indicated a similar slight possibility of low scores showing greater potential for transfer and vice versa.

There was a greater percentage of graduates who attended senior college who graduated than of those who attended a junior college and graduated. In comparing graduates and non-graduates from senior colleges, there was found to be quite a significant difference in the high school grades - those who graduated had higher grades. In comparing high school grades for junior college graduates and non-graduates, there was found to be no significant difference in high school grades. Therefore, high school grades for this sample were more significant for potential graduation from senior college than from junior college.

It was of considerable interest to note that SAT scores did not indicate potential for graduation from either junior or senior college. It could be concluded that it would not be very valid to indicate potential for college graduation or non-graduation on the basis of SAT scores, but high school grades did indicate graduation potential from senior college.

There was a difference of SAT scores between those who attended a junior college and those who attended a senior college; the SAT scores of the senior college enrollees were higher than the SAT scores of the junior college enrollees. There was also a difference of SAT scores between those graduates who had high and low first year college grades; the high SAT scores corresponded with higher grades and vice versa. However, there was no correlation between high SAT scores and graduation from either a senior or a junior college. Therefore, potential for junior or senior college attendance and first year college grades was indicated by SAT scores, but potential for college graduation was not indicated by SAT scores.

I. SUGGESTIONS FOR FURTHER RESEARCH

Suggestions for further research would be to follow-up the college drop-outs to determine reasons for drop-out and what course of action they took after leaving college. Another area of study might be to follow-up students of junior colleges to determine whether they entered senior colleges. Also, a study comparing high school grades and College Board SAT scores of graduates who attended each college would be of interest.

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BIBLIOGRAPHY

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APPENDIX

APPENDIX A

LETTER AND QUESTIONNAIRE

SENT TO GRADUATES

4617 Butte Road
Richmond, Va. 23235
July 1, 1965

Dear (Name of School) Graduate,

In recent years there has been an increasing interest on the part of secondary school students and their families in planning to apply for admission to colleges. A responsibility of guidance counselors in secondary schools is to help students to be realistic in considering application to college. There is a fear on the part of high school students that they may not be accepted due to crowded college conditions. It would be desirable to reduce any unnecessary expenditure of time, money or loss of academic continuity on the part of high school graduates entering college.

I would appreciate your cooperation in supplying some information about yourself which will help us in Henrico County to be of most assistance in guiding college-bound students. This information will be kept confidential and no names will be identified in the analysis of data.

The proposed study will be concerned with answering the following problems:

1. How successful are graduates of (Name) High School in meeting entrance requirements and in being accepted into college?

2. What is the incidence of college transfer, drop-out and graduation by graduates of (Name) High School who enter college?

Enclosed you will find the questionnaire for your use in giving the requested information. Please be as accurate as you can to insure validity of results. A stamped envelope is also enclosed for use in returning the questionnaire.

Thank you very much for your cooperation.

Sincerely,

(Mrs.) Mary Ann Cisne

NAME _____ YEAR OF HIGH SCHOOL GRADUATION _____

HOME ADDRESS _____ HOME PHONE _____

COLLEGES TO WHICH YOU MADE APPLICATION:	ACCEPTED	REJECTED
_____ (City) (State)	_____	_____
_____ (City) (State)	_____	_____
_____ (City) State)	_____	_____
_____ (City) (State)	_____	_____
_____ (City) (State)	_____	_____
_____ (City) (State)	_____	_____

COLLEGES ATTENDED:	DATE ENTERED	DATE LEFT
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

COURSES IN WHICH YOU WERE DEFICIENT ACCORDING TO ENTRANCE REQUIREMENTS:

_____

DEGREE OR CERTIFICATE EARNED _____ DATE RECEIVED _____

APPENDIX B

LETTER SENT TO COLLEGE REGISTRARS

4617 Butte Road
Richmond, Va. 23235
July 28, 1965

Registrar
Name of College or University
City, State

Dear Sir:

I am presently engaged in a study of (Name of High School) graduates who have attended college. This study is being undertaken to determine how well high school grades and College Board scores correlate with college freshman grades. In addition, I would like to determine the incidence of college transfer and/or graduation.

In order to complete the study, I need to know the freshman college grades of the following students who attended your college. All information will remain confidential and names will not be disclosed in the analysis of data. My goal is to assemble these data approximately August 10, 1965.

(Names of students)

Your cooperation and assistance in this matter are appreciated.

Sincerely,

(Mrs.) Mary Ann Cisne

APPENDIX C

DATA SHEET FOR EACH GRADUATE

DATA SHEET FOR EACH GRADUATE

NAME _____ DATE OF GRADUATION _____

HOME ADDRESS _____

PARENTS' NAME _____ HOME PHONE _____

RANK IN H. S. CLASS _____ H.S. GRADE PT. AVG. _____

SAT SCORES: VERBAL _____ MATH _____ TOTAL _____

COLLEGES TO WHICH APPLICATION WAS MADE:	ACCEPTED	REJECTED

COLLEGES ATTENDED:	DATE ENTERED	DATE LEFT

COURSE DEFICIENCY UPON COLLEGE ENTRANCE:

_____

DEGREE EARNED _____ DATE DEGREE RECEIVED _____

FIRST YEAR COURSES AND GRADES:

APPENDIX D

SENIOR COLLEGES AND UNIVERSITIES ATTENDED

Appalachian State College
Bridgewater College
Brigham Young University
Carson Newman College
Colorado School of Mines
Columbia Union College
Converse College
David Lipscomb College
Davidson College
Duke University
East Carolina College
Emory and Henry College
Evangel College
Emory University
Frederick College
Georgia Institute of Technology
Hampden Sydney College
Indiana University
Lake Erie College
Longwood College
Lynchburg College
Madison College
Mars Hill College
Marshall University
Mary Baldwin College
Mary Washington College
Maryville College
Massachusetts I. of Technology
Mercer University
Meredith College
Newcomb College
North Carolina State College
North Carolina Wesleyan College
Piedmont College
Principia College
Queens College
Radford College
Randolph Macon College
Randolph Macon Womens College
Richmond Professional Institute
Roanoke College
Rochester I. of Technology

St. Andrew's Presbyterian College

U. S. Air Force Academy

U. S. Naval Academy

University of Jacksonville

University of Kentucky

University of Maryland

University of Michigan

University of North Carolina

U. of North Carolina Womens College

University of Richmond

University of South Carolina

University of Virginia

Virginia Military Institute

Virginia Polytechnic Institute

Wake Forest College

Washington and Lee University

Westhampton College

William and Mary College

APPENDIX E

JUNIOR COLLEGES AND UNIVERSITIES ATTENDED

Averette College

Bluefield College

Brevard Junior College

Campbell College

Chowan College

Concordia College

Ferrum Junior College

Louisburg College

N. W. Michigan Junior College

Old Dominion College

Pfeiffer College

Richard Bland College

Richmond Junior College

Stratford Hall College

Virginia Intermont College

VITA

Mary Ann Inwood Cisne, the oldest child of Esther Louise Lusk Inwood and Howard Neill Inwood, was born on September 29, 1938, at Waukegan, Illinois.

She graduated from Grayslake Community High School, Grayslake, Illinois, in June, 1956. In September, 1956, she entered the University of Illinois in Urbana, Illinois, where she majored in home economics education and received a Bachelor of Science degree in June, 1960.

She taught home economics in Henrico County, Virginia, from September, 1961, to June, 1964, and since September, 1964, she has been employed as a guidance counselor at Brookland Junior High School in Henrico County, Virginia.

She began her graduate program at the University of Richmond in the summer of 1963. She is a member of Phi Upsilon Omicron, a home economics honor society, and Kappa Delta Pi, an education honor society.

On August 27, 1960, she was married to Maxwell Gerard Cisne, a graduate of the University of Illinois and the University of Richmond. He is an accountant with the firm Peat, Marwick, Mitchell and Company.