

THE RELATION OF READING ABILITY AND INTELLIGENCE TO
ACADEMIC SUCCESS FOR FIRST SEMESTER FRESHMEN
IN INTRODUCTORY COLLEGE COURSES

by

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INTRODUCTION

Reading skills have long been associated with elementary and secondary education; consequently research data needed by those responsible for academic guidance in colleges and universities are limited. An awareness of the problem has not motivated enough research at the college level to make the use of many of the present day tests possible with an adequate degree of accuracy. Studies concerned with the causes of various reading disabilities dominate much of the data available. Little has been done to identify the results of poor reading.

Efficient reading is necessary for college success. The ability to read rapidly with a high degree of comprehension is necessary for attainment of success in college. This study is primarily concerned with the ability of the first year college student to successfully complete introductory college courses. Positive correlations are usually found when reading skill and intelligence are compared. More intensive study is necessary in order that college counselors can counsel students with confidence.

This study was undertaken primarily because first year college students who are experiencing academic difficulties frequently express their need for better reading skills. Experience in counseling college students who have failed courses or were near the failing mark indicated a marked need for

higher ability in reading. Possibly many students who have experienced scholastic difficulty were not aware of their reading deficiency.

If a test administered to a college student is to be rightly used to the fullest extent, it is necessary that some specific facts be known.

The purpose of this study is to ascertain the following information:

1. The relation of intelligence as measured by the American Council on Education Psychological Examination to academic success as indicated by correlating quantitative, linguistic and total raw scores with both letter grades and normalized letter grades in introductory college courses.
2. The relation of reading ability as measured by the Cooperative English Reading Test C 2 Part II to academic success using both the letter grade and normalized letter grade received in introductory college courses.
3. The influence upon validity correlations of differences in standards used in grading as shown by the comparison of correlations of normalized grades and letter grades with intelligence and reading ability.

4. The relation of intelligence as measured by the ACE Psychological Examination to reading ability as measured by the Cooperative English Test C 2 Part II comparing Q, L and total raw scores with speed and level of comprehension scaled scores.
5. The influence of the readability of textbooks used in the introductory courses included in this study according to Flesch's new readability formula upon the reading ability required in the course.

Research related to this problem was not as informative as one would expect. Finding a tool to use for predicting success in college seemed to be most difficult. Arranging batteries of tests from which academic success and reading proficiency could be obtained was important. Establishing the importance of reading skills as they are related to academic success of first year college students remains unsettled.

Turney and Powell (22) suggested greater emphasis on reading skills in the elementary and secondary schools of Kansas; nevertheless, they were hesitant to include reading deficiencies as an aspect of general educational and vocational difficulties.

A slight relationship was obtained by Preston and Botel (15) when they compared reading ability to academic achievement. The Iowa Silent Reading Test was administered to 2048 college students who entered Wharton School of Finance and

Commerce of the University of Pennsylvania from the fall of 1938-1945 inclusive. College achievement was measured by computing the mean of the marks received throughout the four years or the time the student attended the university. The correlation of mean marks and rate of reading was .12 and between mean marks and reading comprehension was .24. The authors indicated the causes for such low correlations may have been the result of :

- (1) Unreliability of grades.
- (2) Inability to measure even a small part of the factors contributing to the success or failure of college students.
- (3) Tests in various courses being constructed for the careful and rapid reader, thus not allowing sufficient time for slow but accurate readers.
- (4) The reading test not being able to measure comprehension independent of speed.

Stroud (Buros (2)) expressed doubt that any single procedure is adequate for measuring the rate of reading.

The problem of finding an intelligence test which can be understood and read well enough to render a usable score was also considered. Blair and Kamman (1) attempted to find whether intelligence tests requiring reading ability rendered low scores to poor readers at the college level. From a group of 1018 freshmen who enrolled at the University of Illinois the fall semester of 1940 they selected their sample. Each student

had completed the ACE Psychological Examination and the Iowa Silent Reading Test, Advanced Form. Sixty-three students were selected who rated above the 75th percentile point on the Iowa Silent Reading Test and obtained a total score of less than 142 on the ACE Psychological Examination. Sixty-one students were selected who ranked below the 25th percentile point on the reading test and who made a total score of 60 or more on the ACE Psychological Examination. The two groups were requested to report to a central testing room for additional testing. Forty-six of the good readers and forty-five poor readers appeared. Each individual took the Otis Self Administering Test of Mental Ability Higher Examination which requires the subject to read the questions. Also included was the New Revised Beta Examination which was completed by each student. The latter examination required very little reading. The result of the inquiry was that both groups scored higher on the Otis Self Administering Test. The authors therefore concluded:

Apparently the amount and difficulty of the reading matter found in such a test is inconsequential and forms no barrier even to the poorest readers found among college freshmen. They evidently read well enough to understand the questions asked.

Triggs (21) suggested that one of the best methods which could be used to identify students who had reading difficulties is the comparison of achievement on the ACE Psychological Examination with a reading test. She did not specifically recommend any particular reading test. However, she recommends that the test used for rating the student's reading ability should be chosen with care.

Reading retardation in superior students is not detected, according to Wheeler (24), because they are able to get by with ordinary reading skills. If these students could be identified and if they were interested in increasing their reading skills, he feels that they would prove to be outstanding students. He concludes that :

- (1) Reading can be improved with instruction.
- (2) Few people read with their greatest potential.
- (3) Factors of instruction and interests influence reading development.
- (4) Physical factors such as defective vision, hearing and speech may retard reading ability.
- (5) Emotional stability and personality patterns must be considered.

Many students have an inflexible rate of reading, Carrello and Sheldon (3) report, and they feel that this tends to lower the correlation between rate and comprehension since they do not vary.

According to Stroud (Buros (2)) the Cooperative English Reading Test attempts a separate measurement of rate and comprehension. Although the rate of comprehension is influenced by the rate of not comprehending, he concludes that it would be difficult to find a better structured test within the limits of its objectives.

The reliability coefficients of the Cooperative English Reading Test as reported by Bear (2) show considerable stability at the 50 point of the scale scores. These range from .82 on C 2 for level of comprehension with only one scale completed to better than .9 for vocabulary and total scores. For secondary and college groups, correlations of between .7 and .8 with intelligence tests have been reported, and of between .39 and .73 with school marks.

The authors of the Cooperative English Reading Test (Davis and King (5)) briefly described the speed and level of comprehension by stating that:

The Speed of Comprehension score represents the product of the rate at which an individual has attempted to comprehend the test material and his success comprehending it. The level of comprehension score provides a measure of ability of the student to comprehend materials of increasing difficulty at the rate at which he chooses to work.

In the manual (5) the authors reported a correlation between speed of comprehension and level of comprehension of .87 at the higher level.

The test used to measure intelligence in this study was the ACE Psychological Examination for College Freshman 1945 Edition. Thurstone, et al. (20) reported that Q and L scores have correlations with total score of .80 and .94 respectively. The authors also reported odd-even reliabilities of .95 for the total score and of .87 and .95 for the Q and L scores respectively.

Super (19) expressed confidence in the ACE Examination as he commended the authors for their careful standardization of the test. He explained that such care is represented by sub-test intercorrelations for the 1938 form which range from .30

to .65 with a median of .39 in an attempt to measure relatively distinct components of intelligence.

Data reported by Wallace (23) for freshman students entering the University of Michigan in the fall of 1947 was obtained by comparing first year grades with a battery of six tests. Tests used were: (1) The ACE Psychological Examination 1947 edition; (2) The Cooperative English Test C 2: Reading Comprehension Form T; (3) The Iowa Foreign Language Aptitude Examination Form M; (4) The Mathematics Placement Test, Form B 2; (5) The Visualization Test, Form II and (6) A vocabulary test. The first three tests were commercially published and nationally used, while the latter three were locally constructed and designed for use at the University. The number of cases included in college courses ranged from 61 in Intermediate French to 336 in English. A correlation of .461 is reported between first semester English grades and the ACE total scores. English grades and L scores were reported to have a correlation of .479. Chemistry grades and Q and total scores were correlated .426 and .453 respectively. The multiple coefficient of correlation between average grades for the first semester and the combination of eight test variables was .554 with a standard error of .039. He felt that each institution should establish its own set of validities in order that test scores could be more meaningful.

Thurstone, et al. (20) studied the relation of grades in various introductory college courses to the ACE examination.

Over a period of four academic years 1933-1937 correlations reported were:

For Humanities - .46 to .53.

For Physical Science - .39 to .46.

For average score all introductory courses - .50 to .53.

PROCEDURE

The two tests used in the study were: The American Council on Education Psychological Examination for College Freshmen, 1945 Edition and the American Council of Education Cooperative English Test C 2; Reading Comprehension, Higher Level, Part II.

The ACE Psychological Examination for college freshmen 1938 Edition has a reported (20) odd-even reliability of .95 for the total score and of .87 and .95 for the Q and L scores respectively. The ACE Psychological Examination was administered to all first year college students who enrolled at Kansas State College during the 1952 fall semester. The test was administered to the first year students by staff members of the Counseling Center as a part of orientation activities prior to enrollment. Each test was machine scored and raw scores were collected from the original test blank. All of the quantitative, linguistic and total raw scores were compiled for all freshmen who were entering college for the first time.

Students who had completed the ACE Psychological Examination and were enrolled in Written Communications I or Written Communications IA were given the Cooperative English Reading Test, Part II. The Cooperative English Reading Test has a reported (5) high reliability of .82 for level of comprehension with only one scale completed. Correlations of between .7 and .8 with intelligence tests and between .39 and .73 with school marks have been reported for secondary and college groups (2). Each Written Communications instructor administered the test to all of the students enrolled in his section or sections. This test had been given previously and the faculty were familiar with administration and procedures needed. The tests were machine scored and the scaled level and speed of comprehension scores were copied from the original test blank for each student.

The courses used in this study were selected because they were introductory and prerequisite for additional college study, and because data could be recorded on a relatively large number of students. Written Communications I, Oral Communications I, College Algebra, Chemistry E-I, and General Chemistry were used. Introductory courses were chosen primarily on the assumption that the classes would be predominately first year students. The frequency with which all of these courses appear in the various college curricular offerings was also felt to be an important reason for the choice. Written Communications I is included in every four year curriculum listed in the 1952 Kansas State College Catalog. General Chemistry is required in

every curriculum offered by the School of Home Economics. College Algebra and Chemistry E-I are required for practically all the Engineering curricula for first year students. Oral Communications I is required in practically every curriculum listed in the college catalog. It is also interesting to note that the Chemistry E-I course was an all male group while General Chemistry was composed mostly of women.

The influence of various standards of grading was considered. Besides collecting the final grade reported for each course as has been done in most studies, the various course grades given by each instructor were normalized and assigned T-score values. This was achieved by collecting the grade books from all of the instructors who had taught one of the five courses included in the study. A distribution of grades for every instructor's total enrollment in the course was made. The percentages of students receiving A's, B's, C's, D's, and F's were determined. From this, it was possible to obtain the sigma score of the median of each letter grade and thus determine a T-score. General Chemistry grades were determined by the laboratory, recitation, and lecture instructors combined, therefore T-scores were derived from the total enrollment in the course. Chemistry E-I grades were collected from each instructor's book. The laboratory grade was used in determining the final grade received in the course.

Final letter grades of A, B, C, D, and F were collected. Grades of Inc or Wd were not used. The normalized grades were

recorded for College Algebra, Written Communications I, Oral Communications I, and Chemistry E-I and General Chemistry. Numerical values were assigned to each letter grade to facilitate statistical comparison. Values assigned were: A = 5, B = 4, C = 3, D = 2, and F = 1.

A total of 1277 students were used in the study. This included all but 54 freshmen who had not taken the Reading Test. Possibly some of the students who are included in this small group could not enter a class in Written Communications. An unexpected increase in the freshmen enrollment caused many classes to be closed and a limited instructional staff could not accommodate additional communications classes. Therefore, many of the 54 students could not take Written Communications and possibly there were some who were reluctant to enroll in the course. It should also be mentioned that special students, who are not satisfying degree requirements and pro-rata students who were enrolled in six hours or less may have added to the group. A total of four withdrew before the end of the semester.

Grades were recorded for one or more classes for 1093 students. The total number of students included in Written Communications I was 997, Oral Communications - 344, General Chemistry - 154, Chemistry E-I - 202, and College Algebra - 172. The remaining 184 students had completed the ACE Psychological Examination and the Cooperative English Reading Test but did not receive a final grade in any of the courses. Sixty-nine students listed in this group withdrew from college be-

fore the end of the semester. The remainder did not enroll in any of the courses or had received an Inc or withdrew from the course. No attempt was made to establish the reason for a student's withdrawal from the various courses or from college. Foreign students were included in this study. There were, however, only four such students, two from English speaking countries, one from South America, and one from the Near East.

The texts used in the introductory courses included in the study were collected. In order to determine the degree of difficulty of reading involved, the New Flesch Readability scale (Farr, et al. 6) was applied and reading ease scores were obtained for each text. Twenty, one hundred word samples were collected from each text and the number of one syllable words in each one hundred word sample was determined. The total number of pages in each text was divided by twenty. Samples were taken from the predetermined pages at the midpoint on the page. Each sample started with the beginning of a paragraph whenever possible. The total number of sentences within each one hundred word sample was found. The length of sentence was determined by dividing the one hundred word sample by the number of sentences contained in each sample. After the number of one syllable words had been counted and the length of sentence had been determined, the totals of each were then divided by twenty. The average number of one syllable words per one hundred word sample and the average length of sentence was found. Using the prepared table furnished by Farr, Jenkins

and Patterson (6), the reading ease score was found for each text used in the various introductory college courses.

RESULTS

An analysis of the results obtained in this study shown in Table 1 reveals that the coefficients of correlation involving grades are small. The results shown do compare favorably with other studies which have been reported.

The ACE total score and the letter grades showed a trend of higher positive relationship than did the reading test scores and letter grades; although, individually the differences are not statistically significant. Although an accurate prediction of college scholastic success cannot be demonstrated from the results of this study, it was possible to indicate trends and possible approaches toward predicting scholastic attainment through the use of the ACE and the Cooperative Reading Test.

Although individually statistically insignificant differences were shown, the ACE total scores seem to be better all-purpose predictors of a student's chances of academic success than the speed or level of comprehension reading scores. The ACE total scores and letter grades in Chemistry E-I showed the highest positive relationship of .551 and Oral Communications I letter grades and ACE total score produced a low positive relationship of .304.

Results of comparing Q scores and L scores with course

Table 1. Correlations of the ACE Psychological Examination and The Cooperative English Reading Test with each other and with letter grades and normalized grades.

Variables	Q		L		Total		Speed		Level		N	
	T	SE	T	SE	T	SE	T	SE	T	SE		
ACE "Q" score	.508	.021	.508	.021	.840	.008	.486	.022	.441	.023	1277	
ACE "L" score	.840	.008	.870	.007	.870	.007	.733	.013	.663	.016	1277	
ACE Total score							.734	.013	.666	.016	1277	
Speed of Comp.	.486	.022	.733	.013	.734	.013			.901	.005	1277	
Level of Comp.	.441	.023	.663	.016	.666	.016					1277	
Coll. Algebra	*L **T	.332 .347	.068 .068	.158 .167	.058 .056	.353 .369	.060 .059	.336 .345	.068 .067	.310 .305	.070 .070	172
Written Comm. I	L T	.265 .263	.029 .029	.466 .475	.025 .024	.453 .457	.025 .025	.458 .453	.025 .025	.380 .380	.027 .027	997
Oral Comm. I	L T	.218 .239	.051 .051	.306 .328	.049 .048	.304 .328	.049 .048	.283 .312	.049 .049	.263 .292	.050 .049	344
Chemistry E-I	L T	.417 .405	.059 .060	.451 .455	.057 .057	.551 .545	.050 .050	.513 .512	.052 .052	.453 .455	.057 .057	202
General Chem.	L T	.422 .422	.066 .066	.390 .390	.068 .068	.465 .468	.064 .064	.414 .417	.066 .066	.400 .406	.067 .067	154

* Indicates letter grade

** Indicates T-score of letter grade

grades in quantitative subjects are not indicative of any particular trend. While College Algebra correlated slightly higher with Q scores than with L scores, the correlation of General Chemistry course grades with Q scores was numerically but insignificantly higher than with L scores. The Chemistry E-I letter grades correlated numerically but insignificantly higher with L scores than with Q scores. Since the three courses were of similar nature not much differential predictive value could be obtained from this evidence.

Written Communications I letter grades correlated significantly higher with L scores than with Q scores. Oral Communications I letter grades correlated numerically but insignificantly higher with the L scores than with the Q scores. The ACE L score would serve as one of the best predictors of success in Written Communications I. It would be hazardous to predict success in Oral Communications I with either the L score or Q score.

The ACE L score and total score were more closely related to the speed of comprehension than the Q score, since the correlation of L score and speed of comprehension score is .733 and ACE total score and speed of comprehension is .734; while Q scores and speed are .633 ($p < .01$).

No significant difference was found between letter grades and T scores when correlated with the ACE and with the Cooperative Reading Test. Therefore, the assumption that normalized grades might be more valuable than letter grades in predicting scholastic success was not verified by this study.

The Standard Error as is recorded in Table 1 was obtained from the use of the formula:

$$\text{Standard Error} = \frac{1 - r^2}{\sqrt{N - 1}}$$

The large N on which most of the correlations were based and the low correlations warranted the use of this simple formula.

Little evidence was given for the value of multiple correlations completed in this study. For the most part, multiple correlations were not significantly higher than the highest simple correlation. In order to ascertain the possible range of the relationship of the various factors, an arbitrary upper and lower correlation was used, in addition to the obtained correlation. For instance, in correlating Q and L scores with letter grades in college courses, the r_{QL} was .508. Assuming that the correlation for Q and L might have been higher, a correlation of .6 was used and if the correlation was lower than reported, a coefficient of correlation .4 was employed. In every case, the maximum difference between the known correlation and the assumed coefficient was very small. Multiple correlations were not prepared for letter grades, ACE Q scores, L scores and Speed of Reading scores combined but instead the Q and L, Speed and L, and Q and Speed were correlated with letter grades in the five introductory college courses. The multiple correlation of QLS (.745) is not significantly higher than the simple correlation reported in Table 1 for L and Speed (.733).

The reading ease of texts used in the five introductory college courses is shown in Table 3. Each text was examined and

Table 2. Multiple correlations between course letter grades and test scores.

	: As- : sumed : r	: Known : r	: As- : sumed : r	: High : simple : r	: Maximum diff. : between known : and assumed r
Grade, Q L	.6	r_{QL}	.4		
		.508			
Coll. Algebra	.3360	.3323	.3331	.332	.0037
Writ. Comm. I	.4664	.4672	.4738	.466	.0066
Oral Comm. I	.3093	.3145	.3233	.306	.0088
Chem. E-I	.4867	.5012	.5197	.451	.0185
Gen. Chem.	.4553	.4687	.4861	.422	.0174
Grade, Speed, L	.8	r_{SL}	.6		
		.733			
Coll. Algebra	.3834	.3602	.3404	.336	.0232
Writ. Comm. I	.4872	.4965	.5166	.466	.0201
Oral Comm. I	.3126	.3179	.3303	.306	.0124
Chem. E-I	.5174	.5247	.5433	.513	.0186
Gen. Chem.	.4254	.4331	.4502	.414	.0171
Grade, Speed, Q	.6	r_{SQ}	.4		
		.486			
Coll. Algebra	.3735	.3875	.3992	.336	.0117
Writ. Comm. I	.4582	.4606	.4666	.458	.0060
Oral Comm. I	.2893	.2976	.3052	.283	.0076
Chem. E-I	.5308	.5477	.5627	.513	.0150
Gen. Chem.	.4674	.4850	.4997	.422	.0147

Table 3. Reading ease scores of introductory college course books.*

Course & text	: Av. No. of :one syllable : words / 100 :word sample**	: Av. :sentence :length	:Reading :ease :score
Written Comm. I			
Davis & Hummel (4)	61	22	45
Hummel & Huntress (9)	63	23	46
Perrin (11)	64	23	47
Oral Comm. I			
Monroe (12)	62	25	42
College Algebra			
Rosenbach & Whitman (17)	64	25	45
Chemistry E-I			
Sellwood (18)	58	16	45
General Chemistry			
King & Caldwell (10)	57	22	38

Legend

Reading ease score

Q-30	Very difficult
30-50	Difficult-Academic
50-60	Fairly difficult
60-70	Standard-digests
70-80	Fairly easy
80-90	Easy
90-100	Very easy

* Flesch's new readability formula (6)

** Based on 20 one-hundred word samples

twenty, one hundred word samples were collected. The Table shows the reading ease score as interpreted by using the table prepared by Farr, Jenkins and Patterson (6). The reading ease scores indicate that the texts were generally difficult reading. The reading ease scores were generally the same for every course, except General Chemistry. The text (10) contained fewer one syllable words per sample which tended to contribute to the low reading ease score. General Chemistry students apparently would have a more difficult task in reading their assignments than students enrolled in any of the other courses studied. Flesch (8) stressed the use of short sentences, especially for writers who are not highly trained to write for public reading. Chemistry E-I students have this type of a text. As shown in Table 3 the average sentence length for the text used in Chemistry E-I was 16. Principles of Speech, the text used in Oral Communications I, contains many long sentences. The reading ease score did not show that it could be used successfully in determining the reading ability necessary to complete college introductory courses. This may have been the result of many other factors which have not been considered. The General Chemistry classes were composed of a high percentage of women, while the Chemistry E-I classes were all male groups. Varying degrees of motivation may have contributed to the problem of relating the reading ease score to reading ability.

DISCUSSION OF RESULTS

Data obtained in this study tend to approximate results obtained by Wallace (23). He correlated first semester grades in languages, social studies, sciences, mathematics and drawing with the ACE Psychological Examination, Cooperative Reading Test and four other testing instruments. A total of 336 students were included in his study on English and ACE relationship. Correlations reported between English letter grades for the first semester freshmen students were with ACE Q score .285 with L score .479 and with total score .461. Results shown in Table 1 show, very similar coefficients of correlation. For instance, correlations of .265 between Q and letter grade, .466 between L and letter grade and .453 between ACE total score and letter grade were found when Written Communications I was correlated with the ACE. The difference is not significant. The course used in Wallace's study may not have been comparable to Written Communications I and nothing is known of the type of instruction given in the English course. Wallace also found that the Q and science courses were not always correlated higher than the L and science subjects. Although Wallace did not indicate whether he used the Speed of Comprehension, Level of Comprehension or the total score on the Reading examination, a coefficient of correlation of .489 is reported between Cooperative Reading score and English letter grade. This again is very similar to the correlation of .458 reported in Table 1.

Over a period of four academic years Thurstone, Thurstone, and Adkins (20) reported that the ACE total score and scholarship were correlated for humanities .46 to .53 for Physical Science .39 to .46, and for all introductory college courses .50 to .53. Courses considered belonging in the field of Humanities such as Written Communications I and Oral Communications I did not in the present study produce as high relationship as those mentioned above. They also report that Q and L scores have a correlation with the total score of .80 and .94 respectively. Table 1 shows Q and L scores have correlations of .840 and .870 respectively in the present study.

It was difficult to make other comparisons of Reading ability and scholastic success since the Cooperative Reading Test has not been widely used.

Low correlations were reported by Preston and Botel (15) in their evaluation of reading ability and chances to attain high scholastic marks.

The Iowa Silent Reading Test proved to be a poor predictor of academic success since a correlation of .16 was found when the reading test scores and college marks were compared. Coefficients of correlation shown in Table 1 were significantly higher than those reported by Preston and Botel (15). However, the Preston and Botel (15) study was based on a four year average while the present study has included only first semester freshmen.

Apparent reasons for low positive correlations reported

in this present study are similar to those reported by previous studies (15, 16, 22, 23, 24). Contributing causes of low correlations in this study may have been due to:

1. Subjective grading procedure.
2. Varying degrees of motivation.
3. Emotional immaturity and poor self discipline.
4. Differences of cultural opportunities.
5. Differences of educational opportunities.
6. Physical disabilities.
7. Poor teacher-student rapport.

Grades in each of the five courses were subjectively determined. For instance, in Written Communications I the final grade was determined to a large extent by the ability the student exhibits in writing a theme at the end of the semester. Three instructors other than the regular instructor assign a grade to the theme. It is not known how frequently the final grade in the course is changed by the final theme grade. Oral Communications I grades were for the most part subjectively assigned since each instructor must personally judge the student's ability to speak effectively.

Motivation of the student to do the very best work is not always evident. Inadequate information concerning occupational goals sometimes cause freshmen in college to be unhappy with their choice of curriculum. Students interested in Veterinary Medicine are sometimes surprised to find courses in Chemistry, Physics and Zoology in their course of study. It is also true,

that some students attend college because they are pleasing their parents or because they are forced by their parents to attend. The uncertainty of most first year male student's draft status would also need to be considered.

Emotional stability and self-discipline are necessary traits and without them the student is likely to be unassuming and less responsible in meeting academic requirements.

Cultural opportunities and modern educational facilities should be mentioned as affecting the opportunity for students to mature, make wise occupational choices and approach college courses with enthusiasm.

Physical disabilities, such as hearing and visual defects may unknowingly contribute to a student's failure in college.

The ability of an instructor to teach effectively and enthusiastically is apparently important to first year college students enrolled in required courses. More personal relationship seems to inspire a better student attitude.

CONCLUSIONS

Academic success in introductory college courses was positively related to factors measured by the ACE and the Cooperative Reading Test. Although in a few instances the correlations between tests and grades were insignificant, the results obtained by this study should prove useful in counseling freshmen college students.

The correlations of the ACE total scores and letter grades were apparently higher than correlations of Q or L scores with

letter grades except in Written Communications I, where the L score was numerically higher. The differences were not statistically significant with the possible exception of Written Communications I. The separate use of Q and L scores did not add to the predictive value of the ACE total score. Intercorrelations in this study between the ACE Q scores, L scores, and total scores were similar to the results obtained by the authors (20) of the ACE Psychological Examination.

The correlations between ACE total scores and letter grades were consistently higher than speed of comprehension scores and letter grades, although the difference for any one course was not significant.

There was no evidence that the T-score of the letter grades added to the predictive value of either the ACE or the reading test.

Multiple correlations of the ACE Q scores, L scores and total scores and the Cooperative English Reading Test speed of comprehension scores were not significantly higher than the highest simple correlation for L scores and speed of comprehension (.733). The R_{QLS} was .745.

The reading ease, as measured by the Flesch new readability formula, was considered difficult for all text used in each of the five courses. The reading ease scores were so similar that no basic conclusion could be made.

Sex differences, subjectivity of grading and choice of curriculum might be considered for additional study.

Although a differentiation of the sexes was not made in this study, it might have been worth while to have investigated this problem.

A study involving only students enrolled in a preprofessional curriculum might be considered as a possible approach in comparing measured abilities with college marks. However, the question of subjective grading in college courses also needs to be considered.

Investigations concerning the success of students within the various curricula instead of selecting students on the basis of sex, age or ability may also provide information needed.

Listening ability may be another important aspect to consider. Possibly the ability to listen may be more important than the ability to read rapidly and effectively.

Another possibility might include a comparison of academic success of male college students who have been deferred from military service until the college degree has been granted with those who were not deferred from the armed forces.

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THE RELATION OF READING ABILITY AND INTELLIGENCE TO
ACADEMIC SUCCESS FOR FIRST SEMESTER FRESHMEN
IN INTRODUCTORY COLLEGE COURSES

by

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AN ABSTRACT

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ABSTRACT

The study "The Relation of Reading Ability and Intelligence for First Semester Freshmen in Introductory College Courses" was based on men and women enrolling for the first time in college. Specifically, the group studied were those who enrolled at Kansas State College in the fall of 1952.

The purpose of the study was to determine the relationship of reading ability and intelligence to scholastic success. Courses used for the study were: Written Communications I, Oral Communications I, College Algebra, Chemistry E-I, and General Chemistry. The American Council on Education Psychological Examination for college freshmen 1945 Edition was used to measure the student's intelligence. The Cooperative English Reading Test C 2, Part II was used to ascertain the student's reading ability.

The ACE Psychological Examination was administered by the staff of the Counseling Center during freshman orientation prior to enrollment. The reading test was given to all students who enrolled in Written Communications I and Written Communications IA. Classroom instructors administered the test to each of their classes at the beginning of the fall semester. Both tests were machine scored.

The raw scores of the ACE and the scaled scores of the reading test were correlated with each other and with the letter

grades and normalized grades of each introductory course..

The reading ease of each text used in the introductory courses was determined by applying the Flesch new readability formula.

In conclusion, correlations reported in the study were small (.158-.551). However, the results reported are similar to those reported in previous research. Intercorrelations of the ACE Q scores, L scores, and the total scores were similar to those reported by the test's authors.

There was no evidence that the T-score of the letter grades added to the predictive value of either the ACE or the reading test. Therefore, letter grades, ACE Q scores, L scores and Speed of Comprehension scores were used in determining the multiple correlation of the factors used in the study. Multiple correlations of the ACE Q scores, L scores and total scores and the Cooperative English Reading Test speed of comprehension scores were not significantly higher than the highest simple correlation for L scores and speed of comprehension (.733). The R_{QLS} was .745.

The correlations between ACE total scores and letter grades were consistently but not significantly higher than correlations between speed of comprehension scores and letter grades. The Q scores and L scores when used separately did not add to the predictive value of the ACE total score.

Correlations between speed of comprehension scores and letter grades were higher than correlations between level of comprehension scores and letter grades. The differences were not statistically significant.

The reading ease, as measured by the Flesch new readability formula was considered difficult for all texts used in the five introductory college courses. The reading ease scores were so similar that no basic conclusion could be made.