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ABSTRACT

The purpose of this investigation was to determine the relationship between reading ability and academic performance of junior college freshman and to what degree a measure of reading ability could predict academic performance. The 313 Pensacola Junior College freshman for whom 1970 Reading Index Scores on the Florida Twelfth Grade Test were available, and who had completed a minimum of 12 hours course work in both the fall and spring terms, 1971-72, were used as subjects. The criterion for academic performance was the cumulative GPA. On the basis of the criteria used and the resultant findings, it was concluded that: (1) The Reading Index Score was found to be a significant predictor of the cumulative GPA in the freshman year of college in terms of the institution participating in this study; (2) The linear trend showed that 23 percent of the variation in GPA could be accounted for by variance in the Reading Index Score. The report includes a review of the literature as well as tabular data and a discussion of the statistical methods. (Author/MJK)

THE RELATIONSHIP BETWEEN ACADEMIC PERFORMANCE AND READING ABILITY OF PENSACOLA JUNIOR COLLEGE FRESHMEN

by

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Pensacola Junior College

A Practicum Presented to Nova University
in Partial Fulfillment of the Requirements for
the Degree of Doctor of Education

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[1]The style, format, and sequence of this study are as delineated by Dr. Bruce W. Tuckman, Conducting Educational Research. New York: Harcourt Brace Jovanovich, Inc., 1972.

CHAPTER I

INTRODUCTION

CONTEXT OF THE PROBLEM

Success in college may depend largely upon the individual's ability to read, and failure in college may result largely from the individual's inability to read.

Historical evidence has proved that achievement in reading is crucial to scholastic performance. Joseph Tremonti (47) comments:

> "Reading skills are the very heart of the junior college program. Just as a cable is composed of numerous wires which are interwoven, so, too . . . reading ability is composed of many skills which are interwoven . . . there are four growth areas in reading skills - word identification, speed, meaning or comprehension, and study skills. Each area entails many skills and sub-skills."

Reading is a progressive skill. A gross deficiency in reading on the junior college level prompts one to generalize about the chronic effect upon a student's academic performance.

Many colleges provide remedial reading as a part of their interim studies. Numerous studies indicate that college students can significantly improve both their reading speed and reading comprehension. Nevertheless, the question is whether a student who is deficient in basic reading skills can, at this period of academic pursuit, make reading progress sufficient to sustain collegiate requirements.

According to Howard Evans (7), there are two optimistic assumptions which underlie special reading programs:

> "The first assumption is that the special reading instruction will significantly improve the reading ability of a majority of the students enrolled. The second assumption is that the gains in learning ability, including increased learning rate, will be sustained following termination of the course, and, presumably, positively affect academic performance."

On the college level, where the larger portions of information are attained through the individual's reading and where reading difficulty cannot be compensated by oral examinations, deficiencies become more markedly noticeable and tend to confirm a negative self-image of failure. Lois Muehl (28) concludes:

> "The blunt truth is that many of the academically ill at ease, college attending students read so far behind their peers, and so much below expected standards of comprehension and facility, that they do need a modified form of remedial reading help. Yet, if we say they do, they either avoid our labs thus designated, or else they enter burdened with a sense of self-negating shame."

Large numbers of college freshmen not only exhibit reading difficulty but are understandably loath to read and, most particularly, to be placed in reading remediation.

Since interim reading programs are conducted on both a compulsory and voluntary basis, it is conceivable that some border-line reading disability students would not be compelled to enroll while some high reading ability students might voluntarily enroll. Because of these possibilities, the students included in this study will consist of both those students who did receive interim instruction in reading and those who did not. This study does not direct itself to test the effectiveness of the college reading programs, but rather directs itself to the relationship between reading ability attained by the students through high school years and their academic performance in college.

STATEMENT OF THE PROBLEM

The purpose of this study was to determine the relationship between reading ability and academic performance of junior college freshmen and to what degree a measure of reading ability could predict academic performance.

STATEMENT OF THE HYPOTHESIS

This study expected to show that there is a positive relationship between reading ability and academic performance on the college level and that a measure of reading ability could predict academic performance on the college level.

RATIONALE FOR THE HYPOTHESIS

Logical Rationale

Although reading skill should be prerequisite to scholastic performance on any level, large numbers of students who have serious reading deficiencies somehow manage to graduate from high school and enter college. Joseph Tremonti's study in 1969 (47) reveals that 15 percent of our high school graduates are seriously handicapped readers and that an even larger percent have reading deficiencies. These statistics have subjected the teaching of reading to severe criticism, but this criticism has done little to reduce the numbers of handicapped readers from becoming high school graduates.

However, the consequences of reading deficiencies for a college student present problems that the student may not have faced on the pre-college level. Spache (40) states that " . . . a college student can anticipate meeting 50 to 60 new words per week," and this challenge

must be met primarily through skills acquired from the teaching of reading. On this level where reading difficulty cannot be compensated by oral examinations and where larger portions of information are attained through the individual's reading, the positive relationship between reading ability and academic performance is a logical prediction.

Empirical Rationale

This increased awareness of reading ability as it affects academic performance in college has, according to Fulker (10), produced some eight hundred citations of published studies which involve college students in some phase of reading in the past few years.

Barbe (2) in his "Reading-Improvement Services in Colleges and Universities," reported that about 75 percent of the colleges surveyed offered remedial help in reading and about half of those indicated that their programs had developed after 1950.

Two studies reported to the 1965 National Reading Conference were concerned with surveys of reading programs. Aukerman (1) sent "opinionnaires" to 300 state college and university presidents. One hundred and thirty-eight of the presidents replied that they had reading programs. However, the presidents who gave positive replies also indicated a need for substantive and definitive data with regard to effectiveness of reading programs in promoting significant academic gains.

Thurston (45) reported a questionnaire survey of college reading programs in Louisiana and Mississippi. Of the twenty-seven colleges responding, twelve reported having programs; thirteen of fifteen which reported having no program indicated that they would like to have such.

Spache (39) makes appropriate retrospective observations to explain the past four decades of the teaching of reading and reading research:

> "Many teachers and researchers were quite content to report simple comparisons of pre- and post-training scores as proof of instructional efficiency. . . there has been little attempt to determine or promote a practical transfer of training to the task at hand . . . even the possible contribution to academic grades, perhaps one of the greatest justifications for reading improvement, was usually ignored."

This increased awareness of reading ability as it affects academic performance has grown from empirical evidence. Therefore, it would seem appropriate to assume that this study would support the prediction of positive relationship between reading ability and academic performance and would provide further empirical evidence that reading ability is most essential for success in college.

OPERATIONAL DEFINITIONS OF THE VARIABLES

The O_1 O_2 Type B Continuous Variables in this ex post facto study, delineated by Tuckman (49, p. 37, 59, 124), were defined as follows:

> Reading ability was measured by state-wide reading test scores.
>
> Academic performance was measured by cumulative grade-point averages.

OPERATIONAL RESTATEMENT OF THE NULL HYPOTHESIS

There will be no relationship between reading ability, as measured by the Reading Index Score on the Florida Twelfth Grade Test, and academic performance, as measured by the cumulative grade-point average in the freshman year of college.

DEFINITION OF TERMS

Florida Twelfth Grade Test

The Florida Twelfth Grade Test is a battery of five tests which

includes Aptitude, English, Social Studies, Natural Sciences, and Mathematics and is administered to all seniors in Florida high schools in October of each academic year.

Reading Index Score

The Reading Index Score is a composite score derived by summing the Verbal Score on the Aptitude Test, one-half of the English Score, and one-half of the Social Studies Score obtained from the Florida Twelfth Grade Test. (See Appendix C)

Maximum Scores and Scoring Formulas

	Test	Maximum Score	Scoring Formula
Book I	Aptitude		
	Verbal	50	Number Right
	Quantitative	50	Number Right
	English	85	Number Right
Book II	Social Studies	65	Number Right
	Natural Sciences	60	Number Right
	Mathematics	60	Number Right
Reading Index		125	Composite

Academic Performance

All grades earned during the first and second term of the freshman year by each student included in this investigation will be coded on a four-point scale (4 = A, 3 = B, 2 = C, 1 = D, 0 = F). For each course the number of hours will be multiplied by the numeric grade code. These products will then be summed and divided by the total number of course hours completed by each student to yield a cumulative grade-point average for the freshman year.

Freshmen

The students used in this investigation included the total population of students who had taken the Florida Twelfth Grade Test and who had completed the first and second terms of the freshman year with a minimum of 12 hours of course work during each of the two terms at Pensacola Junior College during the 1971-72 academic year.

Each of the students identified as freshmen and included in this investigation, therefore, had a Florida Twelfth Grade Test Score published in the Fall 1970 Percentile Ranks Florida State-Wide Twelfth Grade Testing Program, an annual listing sponsored by the University of Florida. Each of the students had graduated from a Florida high school in 1971 and had completed a minimum of 24 hours of course work during the freshman year at Pensacola Junior College.

ASSUMPTIONS AND DELIMITATIONS

The Reading Index Score on the Florida Twelfth Grade Test was assumed to be a valid instrument for determining the student's reading ability.

This assumption was appropriate because the Reading Index Score determines the placement of students into remedial reading courses. Generally, Florida Junior Colleges require or recommend that each student who scores below the percentile rank of 30 on the Reading Index Score be placed in an interim reading program. Therefore, the Reading Index Score on the Florida Twelfth Grade Test is considered to be a criterion for assessing the student's reading ability.

The cumulative grade-point average was assumed to be a reliable and valid measure of the student's level of achievement during the freshman year of college.

This assumption was appropriate because grades and grade-point [illegible] are the only "objective" data often considered [illegible] student's

academic performance that appear on official transcripts. Further, scholastic honors and awards or academic probation and suspension are based on the student's grade-point average. Therefore, the cumulative grade-point average is considered to be the criterion for measuring the student's academic performance.

The students used in this study were assumed to represent the population at Pensacola Junior College. There is no known reason for believing that this 1971-72 academic year and this junior college is not typical of a much larger population of college freshmen. Strictly considered, however, the conclusions can only be generalized to the particular population studied.

SIGNIFICANCE OF THE STUDY

This investigation will extend empirical research which concerns the relationship between reading ability and academic performance and will provide data that may aid educators who are directly or indirectly involved with the teaching of reading. Observations concerning this relationship could encourage educators on the pre-college level to renew their already conscientious efforts to improve the reading skills of their students. In the broadest possible terms, this study might suggest the need for further research which would provide empirical evidence that reading instruction on the junior college level is successful in promoting significant academic gains. Academic performance relative to reading ability has not previously been systematically studied at Pensacola Junior College.

CHAPTER II

REVIEW OF THE LITERATURE

AN OVERVIEW

The college student is approaching that stage of his life where he will soon have to deal with society directly and prove his abilities outside the limited environment of the classroom.

A number of studies have been reported which have attempted to analyze components of success or failure of students entering college. The past four decades have produced some 220 or more articles, dissertations, and books dealing in some fashion with junior-community college reading skills. This literature is unevenly diffused in twenty-three different journals varying in scope and purpose from the Junior College Journal, responsible for fifty-six articles, to the American Journal of Clinical Hypnosis, hosting one one article. Ten different yearbooks and conference proceedings, twenty-two dissertations, sixteen Educational Resources Information Center (ERIC) releases, nine monographs, and occasional papers round out the list of vehicles according to Kerstiens (23).

The geographical origins of this potpourri of literature reveal some interesting extremes for its lack of pattern. Twenty-nine states are responsible for all the literature - California having produced 38 percent, New York 6.5 percent, and Texas 6 percent with the other 26 states trailing far behind. Perhaps even more interesting is the variety of disciplines represented. The sociologist, psychologist, psychiatrist, linguist, bibliotherapist, counselor, optometrist, rhetorician, instructional tech-

nologist, and mathemagenicist are a few professionals who have concerned themselves with the teaching of reading. Such a harlequin of verbiage does not make for consistency in findings, content, or style (23).

Here, in chronological order from the earliest publication in 1929 to the present, are annotations of ten noteworthy contributions.

Probably the first record of research and development in junior college reading/study skills was contributed by Von Kleinsmid and Touton (51). This comprehensive monograph notes that the inferior work of lower division students is frequently due to inadequate reading preparation and inadequate knowledge of the "laws of learning." This research questions whether anything fundamental to the teaching of college-level reading has emerged in the field during the last forty years.

Miklas (27) contributed perhaps the most comprehensive and detailed study in his survey of fifty-seven colleges, twenty-eight of which were junior colleges. He reports that 75 percent of junior colleges have remedial reading programs, 81 percent of the practitioners perceive that other staff members are indifferent to the program, and a high percentage believe that heavy teaching loads, inadequate tests, and administrative indifference hamper their effectiveness.

The most incredible of the studies surveyed was that of Mullins (29) who suggested that professional disparagement of the tachistoscope results in the device's uninspired use. Mullins explains a vertical periphery technique of reading three-line phrases at .1 second exposure time. He claims that pre- and post-testing on the SRA Better Reading Book Two produced average increases of from 252.9 WPM at 64.7 percent comprehension to 19,259.8 WPM at 69.8 percent comprehension. This would indicate that the readers in his junior college reading course enjoyed an efficiency

index increase of from 174 WPM to 13,445 WPM or that readers became 77 times more efficient in one semester's treatment.

The most estimable study, presented by Newman (32), gives an objective, frank, and graphic survey that assesses the severe handicaps of junior college students and offers a complete program description: training in perceptual accuracy; multilevel materials for reading, spelling, and vocabulary; motivational media; and selection of staff who will "adjust their approaches until they find suitable ways to serve the reading needs of their own particular students."

Holding that there is a danger of "overspecialization in a fragmenting of the student's performance, and that the reading specialist is a case in point," Worthen (54) gives a most reproving summation. He states that "when the matrix of learning is such that it can convince him (the English instructor) of the value of the machine and the specialist, he will even go willingly to them for help."

Kaxmierski (21) reports an exemplary finding in college and adult reading where five to eight percent of the student population is enrolled in a "costly but profitable" nongraded course structure in reading/study skills, complemented by a referral laboratory. This study in the Lorain County Community College provides some objective measures of the program's success, which is attributed to "the many beneficial factors of 'separate' department status; combination of courses and independent labs; an enormous supply of materials; cooperation from the administration; an outstanding staff; and a community with foresight."

A most carefully controlled study, reported by Tascow (44) at the Central Oregon Community College, gives a comparison of two fifty-hour courses designed to increase vocabulary, reading comprehension, and reading rate. One course met five days a week for ten weeks; the other

course met two days a week for twenty weeks. Pre- and post-testing on the Nelson-Denny Reading Test, Forms A and B, indicated that the short-term course was as effective as the long-term course, and a re-test ten weeks after course termination indicated that the intensive training availed slightly higher retention of skills.

Feuers' (9) most sobering study at the University of California analyzes reading skills and five other variables and indicates that there is no significant relationship between subject GPA and comprehension or vocabulary measures, and, further, that IQ does not relate to college GPA or subject GPA. "It appears that high general reading ability gives no assurance of academic success nor, conversely, does low reading ability assure failure in some subject areas."

Bossone (4) reinvents the wheel in a most ineffectual reading skills study at the City University of New York. He claims a "unique dimension" and assumes that an unrandomized poll of 496 student's feelings about their academic problems would correlate highly with the "performance level of reading/study skills." This survey, replete with sixteen pages of graphs, ignores extant research and supporting objective measures.

At Moorpark College, Strumpf (42) gives a most refreshing look at the teaching of college-level reading. He defines reading as "having a love affair with a book" and he evaluates the reading specialist's primary function as motivational as he describes "the most galastrophic reading program, MINE!" Strumpf also advocates that the practioner should be a male who has experienced some difficulty in his own schooling, and that a reading laboratory should be replete with a "dreaming center."

These extreme inconsistencies in findings and attitudes relative to junior college-level reading logically suggest a close look at the "system."

REFORM WITHIN THE SYSTEM

Since reading skill or the lack of it affects learning in most disciplines, critics from both inside and outside of the teaching of reading arena are calling for a fundamental departure from the prevailing educational structure and are emphasizing the necessity of a larger role for the individual in the total educative process. Some of these critics include: Paul Goodman, John Holt, Don Butcofsky, Eileen Sargent, and John Vaisey.

Despite the apparent success of many students in terms of grades, promotion, and graduation, the critics maintain that the gross inadequacies of reading skills preclude any real achievement or success for these students. Paul Goodman (11) suggests that:

> "We are so mesmerized by the operation of a system with the appropriate name, for instance 'Education,' that we assume that it must be working somewhat, though admittedly not perfectly, when perhaps it has ceased to fulfill its function altogether and might even be preventing the function, for instance education."

John Holt (16) echoes this rationale with an even broader scope:

> ". . . there is a more important sense in which almost all children fail: except for a handful, they fail to develop more than a tiny part of the tremendous capacity for learning, understanding, and creating with which they were born and of which they made full use during the first two or three years of their lives."

Don Butcofsky's "Any Learning Skills Taught in High School (5)?" states that among inferior study practices related to reading, 65 percent of the students in his Learning Skills Center at the University of Delaware failed to read sources other than the textbook. Fifty percent failed to use the table of contents of a textbook as a frame of reference. Forty-two percent failed to use clues such as questions, headings, and summaries to guide their reading. Twenty-eight percent

suffered from word-by-word reading.

Eileen Sargent (37) believes that beyond being taught the skill of reading, "High school students should know what is actually involved in the process of reading . . . high school students should be oriented to a theoretical understanding of reading."

John Vaizey's Education for Tomorrow (50) shares the awareness of inadequacies in the system and reflects:

> "An enormous amount of present-day learning in the schools could on rational examination be found to be quite purposeless, whilst a substantial amount of what would be useful is not taught; and what is taught, whether purposeful or purposeless, is often being taught extremely inefficiently."

Although the teaching of reading need not bear the full responsibility of reform to eradicate inadequacies in the educative process, the teaching of this sequential skill is paramount. Spache (40) says that " . . . a college student can anticipate meeting 50 to 60 new words per week," and this challenge must be met primarily through skills acquired from the teaching of reading.

The well-know English essayist and poet Joseph Addison points the way:

> "Reading is to the mind what exercise is to the body. As by the one, health is preserved, strengthened, and invigorated; by the other, virtue (which is the health of the mind) is kept alive, cherished, and confirmed."

Joseph Tremonti (47) would have shocked Seventeenth Century Addison with the following recent study:

> "1. As many as 16 million Americans are functional illiterates. They cannot read above the 4th grade level.
>
> 2. Eight million adults over the age of 25 cannot read the equivalent of a daily newspaper.
>
> 3. Twenty-seven percent of army draftees fail the mental examinations because they are disabled readers.

4. Fifteen percent of our high school graduates are seriously handicapped readers."

Hopefully, the teaching of reading will find compatibility with Anthony Trollop, the Eighteenth Century English novelist, who promised his young friends:

> "With reference to this habit of reading, I make bold to tell you that it is your pass to the greatest, the purest, and the most perfect pleasure that God has prepared for His creatures."

This "perfect pleasure" and utilitarian tool, reading skill, has been a topic of interest, concern, and research which has addressed itself to improvement and has grown proportionately greater in each of the past successive four decades.

FOUR DECADES OF RESEARCH AT THE COLLEGE AND ADULT READING LEVEL

Reading, the basic tool of education and one of the most important skills in life, has been a topic of concern and research which has increased with each decade since 1930 according to Fulker (10).

From 1945 through 1952, Traxler and Townsend (46) noted that there was a larger number of studies of remedial and corrective reading at the college and adult level than at the high school level. Summers (43) reported that almost twice as many doctoral theses concerned college reading between 1950 and 1960 than between 1930 and 1950.

Studies by Crarters (6), Triggs (48), Witty (53), and Zerga (56), reporting the rising status and practices of remedial and corrective reading programs in junior colleges, were published between 1940 and 1962.

From the late 1940's to the early 1960's moderate to high correlations between reading achievement and college success have been reported by Havens (13), Hill (15), Jackson (18), and Smith (38).

However, low or negative correlations between reading achievement and college success have been reported by McQueen (26), Murphy and Davis (30), and Preston and Botel (34).

Several investigations in 1961 were related to the influence of help given in college reading programs upon grades or scholastic achievement. Cunderson (12) found that benefits from reading instruction or gains in reading skill resulting from college reading programs were most pertinent to success in courses such as religion, history, sociology, English, and chemistry. Wright (55), in his study involving three hundred male freshmen, found that the reading course required of the selected college freshmen did seem to help students in verbal courses and in their reading.

In 1962 Bloomer (3) found that an experimental group made significantly greater gains in reading speed and comprehension than did a control group. Bloomer concluded, however, that gains in reading skill were not related to academic achievement or to gains in such. Feinberg, Long, and Rosenheck (8) found no "statistically significant differences in either test score gains or college grades" after freshmen students at the City College of New York had participated in a mandatory reading skills course. Hill (14) reported that comprehension, technical and general vocabulary, and reading rate of Indiana University freshmen improved after participation in a compulsory sixteen-session reading course.

A subject analysis of a reading program at New York City Community College in 1963 was presented by Nelson (31). Ninety-six students were placed in five class sections according to deficiencies in reading (relative to a Diagnostic Reading Test Score). Nelson reported that most improvement was made in vocabulary, least in comprehension. In the

three better sections in which speed reading was stressed, rate gains ranged from 75 to 104 WPM. The median reading grade level in the three better sections increased from eighth grade to eleventh grade. Approximately two-thirds of the students in the three better sections "received a grade sufficient to matriculate to the degree program," according to achievement at a tenth-grade level on the Diagnostic Reading Tests. Of the total 96 students in the program, however, less than half showed reading gains, approximately one-fifth of the students showed no gains, and approximately one-third of the students showed reading loss.

Lafitte (24) compared results obtained with three different types of methods in Winthrop College reading improvement courses. One of the three groups of freshmen practiced skimming procedures, one was given perceptual training, and the third group was given a combination of both procedures. Lafitte reported that all three groups appeared to make gains in reading speed, but the comprehension gains were not significant for any of the three groups.

In 1964 Parker (33) found change in grade-point averages to be correlated negatively with rate changes and only slightly positively with comprehension changes in compulsory reading courses. However, correlations lacked statistical significance.

In 1969 the inconsistencies in findings continued in studies by Haitgren and Crowe, Karlstrom, and Stebens versus studies by Kelly and Koch, Rosenstern, and Wilson.

Haitgren and Crowe (17) found that over three-fourths of students participating in a University of Minnesota reading program had exceeded the predicted end-of-year grade-point averages and had higher group grade-point averages than the average for all male freshmen. Karlstrom (20) reported that nine of ten students who had participated in an "intensive workshop" on reading/study skills had raised their grade-point aver...

sufficiently at the end of the semester to remain in school. Stebens (41) reported that a check with achievement in subject areas indicated that students were using the skills that had been required in the reading program.

However, Kelly and Mech (22) found "no indication" that a group of Washington State University reading program participants had made improvements in reading performance as reflected in their grade-point averages. Regensburg (35) found no significant differences between grade-point averages of an experimental group of Rutgers freshmen who had participated in a reading improvement course and control groups who had either been denied admission to the course or who had been urged to participate and had chosen not to. Wilson (52) also found no differences in academic achievement of University of Mississippi liberal arts students who had taken the course in reading and a matched group of students who had not taken the course.

An evaluation of the remedial program of Miami-Dade Junior College in 1970, led Losak (25) to conclude that the program was not effective in raising grade-point averages to a "C" level or in reducing student withdrawal. The reading program had not effected reading test scores higher for remedial program participants than those of a randomly selected control group, and it did not result in a significantly higher proportion of passing grades after one semester of remediation.

Looking into the future, Spache draws from Alton L. Raygor's "Reading Programs of the Future (35)," and states that we may substitute the intensive, controlled study of the results of instructional changes upon the behavior of the individual, rather than placing our faith in large group studies. Perhaps, on a small scale, " . . . we may study respondent behavior in reaction to the printed word and contrast this

with the effectiveness of operant reinforcement of such behavior. Perhaps our technology will progress to the point that we may be able to stimulate and analyze the way in which an individual learns to decode and encode. Thus, we may discover how realistic are our concepts of reading based on information theory, associative thinking, and readability."

On the basis of the evidence surveyed, it is reasonable to assume that reports claiming success or admitting failure in the teaching of reading on the college level sustain the need for further investigation concerning the relationship between reading ability and scholastic achievement.

CHAPTER III

THE METHOD

THE SUBJECTS

The subjects for this investigation consisted of Pensacola Junior College students. Every student who met the criteria for this investigation was selected.

THE PROCEDURE

A total study group of 313 subjects was selected from the total student population of 4,401. Subjects for the study group were selected on the basis of the following criteria:

1. Each of the students completed a minimum of 12 hours of course work during the Fall Term 1971.
2. Each of the students subsequently completed a minimum of 12 hours of course work during the Spring Term 1972.
3. Each of the students had a Reading Index Score on the Florida Twelfth Grade Test which was published in the 1970 Percentile Ranks Florida State-Wide Twelfth Grade Testing Program, an annual listing sponsored by the University of Florida.

This method of selection yielded a population with the following descriptive characteristics:

1. Each of the students included in this investigation took the Florida Twelfth Grade Test in October, 1970, and graduated from a Florida high school in June, 1971.
2. Each of the students included in this investigation, having graduated from high school in June, 1971, had had no previous college work.
3. Each of the students included in this investigation, having graduated from high school in June, 1971, was approximately seventeen to twenty years of age.

This method of selection eliminated transfer students, sophomore students, associate degree completion program (ADCOP) students, and students who had returned to college after a lapse of time. Therefore, the population included in this investigation is somewhat homogeneous with reference to chronological age and number of years in school.

THE INDEPENDENT VARIABLE

The measure of reading ability was the Reading Index Score (RI) derived from the Florida Twelfth Grade Test (SRT). The RI is a composite score obtained by summing the Verbal Score on the Aptitude Test, one-half of the English Score, and one-half of the Social Studies Score. The RI is a percentile rank based on the performance of 83,458 Florida high school seniors who took the SRT in October, 1970.

THE DEPENDENT VARIABLE

The measure of academic performance was the cumulative grade-point average (CGPA) for the freshman year of college. Based on a 4.0

scale, where 4 = A, 3 = B, 2 = C, 1 = D, and 0 = F, the weighted average of the Fall Term 1971 grade-point average and the Spring Term 1972 grade-point average yielded the CGPA.[1,2]

STATISTICAL TREATMENT

The statistical procedures used in the treatment of data were: 1) linear regression analysis and 2) correlation analysis.

In this investigation the Step-Wise Multiple Regression Program set forth by IBM Scientific Subroutine Package[3] was used to determine the coefficient of linear correlation and the regression coefficients derived from the CGPA and RI variables. The t-test was used to determine the significance of the slope of the linear regression line, using the .05 level of significance. A table of Critical Values of the Pearson Product Moment Correlation Coefficient (Tuckman, 1972, p. 371) was used to test the significance of the correlation coefficient at the .05 level of significance.

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[1]The raw data of Cumulative Grade-Point Averages (CGPA) and Reading Index Scores (RI) for the total population of 313 students are reported in Appendix A, pp. 36-40.

[2]The tabulated raw data of the Mean Cumulative Grade-Point Averages (CGPA) and the Mean Reading Index Scores (RI) for the total population of 313 students are reported in Appendix B, p. 42.

[3]The major portion of the statistical computations used in this study was performed by the IBM 360 computer at The University of West Florida.

CHAPTER IV

ANALYSIS AND RESULTS

The basic element in the design of this investigation was the relationship between the two variables Reading Index Score (RI) on the Florida Twelfth Grade Test (SRT) and the cumulative grade-point average (CGPA) for each of the students included in this investigation.

The Step-Wise Multiple Regression Program from the IBM Scientific Subroutine Package was used to determine the statistical relationship between the CGPA and RI of college freshmen and to provide a regression analysis for purposes of determining the linear equation to predict CGPA from RI.

The analyses of the data are presented in Tables 1, 2, and 3:

Table 1 reports the data for the regression equation which was used to determine the linear trend between CGPA and RI. The model employed to represent this relationship was the linear equation $Y = a + bX$ where Y was the CGPA (the criterion), a was the intercept (constant), b was the regression coefficient, and X was the RI (the predictor).

TABLE 1

THE INTERCEPT, a, AND THE SLOPE, b, FOR

$Y = a + bX$

N	a	b
313	1.3562	.01358

The regression equation formulated was as follows:

$$Y = 1.35462 + .01358X$$

The major or primary hypothesis was:

Hypothesis 1. There will be no relationship between reading ability, as measured by the RI on the SRT, and academic performances, as measured by the CGPA in the freshman year of college.

To test and fully explore the first null hypothesis it was necessary to generate and test additional hypotheses. In order to test the significance of the slope, the following hypothesis was generated:

Hypothesis 2. The two variables RI and CGPA are not linearly related. This null hypothesis was rejected at the .05 level of confidence. The t-values derived exceeded the table values given for the .05 level of confidence. A comparison of computed t-values with critical values (41, p. 370) showed that the linear regression was significant at the .05 level of confidence. Therefore, there was evidence to support a strong linear relationship between RI and CGPA.

Table 2 reports the data for the t-test which was used to determine the significance of the slope of the linear regression line.

TABLE 2

COMPUTED t-VALUES FOR TESTING THE SIGNIFICANCE OF THE SLOPE OF THE LINEAR REGRESSION LINE

N	Computed t-Values	Significant at .05 Level
313	9.729	yes

In order to determine the direction of the linear relationship between the CGPA and RI and to discern the strength of this relationship, the following null hypothesis was generated:

Hypothesis 3. The equation of the line of best fit will not predict CGPA from a given RI. In other words, b, the slope of the true regression line will be zero. The null hypothesis was rejected at the .05 level of significance. The values derived exceeded the values reported (41, p. 371) for the .05 level of confidence. Therefore, the equation of the line of best fit will predict CGPA from a given RI.

Table 3 reports the data for the coefficient of linear correlation between RI and CGPA which was designated by r and was a unitless number within the range of $-1 \leq r \leq 1$. This measure of relationship yielded the direction (positive or negative) and an indication of the strength of the observed linear relation between the CGPA and RI.

TABLE 3

COEFFICIENT OF LINEAR CORRELATION

BETWEEN RI AND CGPA

N	r	Significant at .05 Level
313	.483	yes

RESULTS

The findings indicate that the original hypothesis (Hypothesis 1) can be rejected as it relates to the variables (CGPA and RI). Two statistical tests have shown that the relationship between X and Y is too great to be attributable solely to chance. There is a significant relationship between CGPA and RI.

In the regression equation, a substitution of a particular student's RI score for X predicts the probable CGPA that a freshman will earn.

The example which follows illustrates the use of the regression model for predicting the CGPA.

If a student had an RI score of 71, his most likely CGPA would compute:

$$Y = 1.35462 + .01358(71) = 2.32$$

The coefficient of determination (r^2), which is an indication of the strength of the linear relationship between CGPA and RI, revealed the amount of variance accounted for by the variables. The percent of variance accounted for was as follows:

$$(0.483)^2 = 23\%$$

The central question of this study was: Will there be a relationship between academic performance and reading ability and will reading ability, defined in this study as RI, predict academic performance, as measured by CGPA earned during the freshman year of college? A study group of 313 student subjects was selected for analysis.

The findings indicated a positive and significant relationship between the reading ability, as measured by RI, and academic performance,

as measured by CGPA the freshman year of college, for the subjects under consideration. Using the regression model Y = a + bX where Y was the CGPA (the criterion), a was the intercept (constant), b was the regression coefficient, and X was the RI (the predictor), the RI was found to be a significant predictor of the probable CGPA in the freshman year of college. Correlation analyses, employing the coefficient of determination, revealed a linear trend which showed that 23 percent of the variation in CGPA could be accounted for by variation in RI. The results of the analyses and findings were significant at the .05 level of confidence.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this investigation was to determine the relationship between reading ability and academic performance of junior college freshmen and to what degree a measure of reading ability could predict academic performance. If a positive and significant relationship could be determined, then a measurement of reading ability might be used to predict a probable cumulative grade-point average at the end of the freshman year for a student who had not yet entered college. These findings might be of more than casual interest to high school seniors, freshmen entering college, their parents, and college instructors, counselors, and administrators.

Specifically, the problem may be formulated as a search for a relationship between a dependent variable Y and an independent variable X. The variable Y for this investigation was the student's cumulative grade-point average for the freshman year in college and the independent variable X was the student's Reading Index Score on the Florida Twelfth Grade Test.

A linear regression model was used to predict a student's cumulative grade-point average at the end of the freshman year in college as a function of his Reading Index Score. The objective was to ascertain the degree of relationship between these variables since this might be useful to admissions officers in identifying potentially successful or unsuccessful students.

The data used in this study were selected from the student body at Pensacola Junior College. Every student who had completed a minimum of 12

hours of course work during the Fall Term 1971 and a minimum of 12 hours of course work during the Spring Term 1972 and had a published Reading Index Score on the Florida Twelfth Grade Test in the 1970 Percentile Ranks Florida State-Wide Twelfth Grade Testing Program was selected for this investigation.

Analysis of the data revealed meaningful relationship between the variables. The Reading Index Score on the Florida Twelfth Grade Test was found to be a significant predictor of the probable cumulative grade-point average in the freshman year of college. Correlation analyses, employing the coefficient of determination, revealed a linear trend which showed that 23 percent of the variation in CGPA could be accounted for by variation in RI at the institution surveyed. Results of the analysis were significant at .05 level of confidence.

The hypothesis was postulated that reading ability would have a significant relationship to academic performance and that a positive and significant correlation would be found between cumulative grade-point average and Reading Index Score. The findings of this research support this hypothesis.

This research and the findings suggest further research that is needed in the area of reading ability and academic performance on the junior college level.

The available studies on the effectiveness of remedial reading courses in two year colleges have reported results largely in terms of group gains as they relate to selected skills. This evidence suggests that particularized instruction leads to increased ability in certain skills, but the evidence does not test the further assumption that such improvement results in improved academic performance. Many junior college reading programs assume that the utility of skills attained in a

reading course is transferred and applied to other courses. However, adequate empirical evidence that would indicate such transfer and application of skills is perhaps lacking at the institution included in this study.

Although the specific objectives of remedial reading courses vary widely, the fundamental purpose of these courses is ultimately to prepare the underachieving student for participation in a regular course of study. The measurement of the effectiveness of reading courses on the college level should be the extent to which students demonstrate improved performance in and matriculation from the college program.

The findings of this research have proved the positive and significant correlation between reading ability and academic performance of the junior college freshmen used in this study and have, thus, provided empirical evidence that reading ability is most essential for success in junior college. In the broadest possible terms, this research has suggested the need for further research which might provide empirical evidence that reading instruction on the junior college level is successful in promoting significant academic gains.

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APPENDIX A

DATA ON FULL-TIME FRESHMAN STUDENTS WHO TOOK THE FLORIDA TWELFTH GRADE TEST IN OCTOBER 1970 ENTERED PENSACOLA JUNIOR COLLEGE IN FALL 1971 AND COMPLETED THE 1971-72 ACADEMIC YEAR

APPENDIX A

CUMULATIVE GRADE-POINT AVERAGES (CGPA) AND READING INDEX SCORES (RI) FOR PENSACOLA JUNIOR COLLEGE STUDENTS 1971-72

Student Number	CGPA	RI	Student Number	CGPA	RI
1	2.47	71	32	2.00	90
2	1.89	40	33	2.50	64
3	3.25	80	34	2.37	84
4	2.07	96	35	2.80	94
5	2.04	54	36	1.68	45
6	1.96	54	37	2.39	83
7	2.04	85	38	3.20	76
8	2.03	49	39	2.30	83
9	1.41	23	40	2.53	61
10	1.85	56	41	3.97	94
11	2.29	96	42	3.47	97
12	2.09	73	43	2.46	77
13	2.00	71	44	2.51	54
14	1.93	66	45	2.96	85
15	2.53	90	46	2.48	93
16	1.58	73	47	2.70	88
17	2.51	79	48	3.36	99
18	2.22	39	49	2.12	64
19	2.09	45	50	2.93	56
20	1.66	47	51	1.93	79
21	2.70	61	52	2.12	56
22	1.96	52	53	1.48	07
23	2.34	69	54	2.35	97
24	2.46	79	55	2.00	66
25	2.43	66	56	3.62	95
26	2.82	60	57	2.17	85
27	2.03	40	58	1.89	49
28	2.33	58	59	2.81	98
29	2.35	80	60	2.71	94
30	2.62	87	61	2.24	42
31	3.10	69	62	1.82	83

Appendix A - Continued

Student Number	CGPA	RI	Student Number	CGPA	RI
63	2.54	85	108	3.06	87
64	2.03	61	109	2.22	87
65	2.00	51	110	1.45	31
66	2.96	84	111	3.25	97
67	2.24	89	112	2.40	61
68	2.10	54	113	3.31	98
69	3.16	81	114	2.50	79
70	3.08	79	115	1.42	49
71	2.40	73	116	2.33	61
72	2.25	90	117	2.25	74
73	3.12	97	118	1.37	71
74	2.00	83	119	2.43	87
75	2.82	98	120	2.29	74
76	1.96	90	121	2.84	68
77	2.03	64	122	2.32	94
78	2.10	56	123	1.89	76
79	2.60	64	124	2.44	84
80	2.33	85	125	2.96	88
81	1.71	45	126	2.24	45
82	2.75	61	127	2.42	89
83	1.53	84	128	1.68	86
84	2.77	85	129	1.36	74
85	1.58	71	130	2.60	91
86	2.38	64	131	2.96	84
87	2.39	68	132	2.58	85
88	1.93	77	133	1.42	34
89	2.14	80	134	2.76	93
90	2.80	87	135	2.90	74
91	2.10	60	136	2.32	86
92	1.44	08	137	3.72	99
93	2.37	90	138	2.43	73
94	2.23	74	139	2.53	80
95	2.17	31	140	1.90	84
96	2.06	60	141	1.88	60
97	2.65	93	142	2.27	79
98	3.55	84	143	2.24	52
99	3.64	94	144	1.66	80
100	2.00	88	145	2.12	58
101	1.88	61	146	2.67	84
102	2.78	86	147	2.03	47
103	1.87	56	148	2.60	80
104	2.06	93	149	2.82	90
105	2.11	80	150	2.32	71
106	2.03	93	151	2.03	76
107	2.80	49	152	2.77	86

Appendix A - Continued

Student Number	CGPA	RI	Student Number	CGPA	RI
153	2.14	83	198	2.34	83
154	1.27	77	199	2.96	54
155	1.55	79	200	2.00	73
156	1.88	74	201	1.93	68
157	1.83	40	202	2.19	71
158	2.53	77	203	1.79	80
159	2.15	44	204	2.25	86
160	3.03	89	205	3.03	97
161	1.80	81	206	3.00	97
162	2.85	76	207	3.08	89
163	2.44	49	208	1.91	29
164	2.35	93	209	2.54	96
165	1.74	56	210	3.79	98
166	2.12	52	211	1.53	66
167	1.73	45	212	2.36	52
168	2.30	60	213	1.55	58
169	1.93	89	214	1.70	93
170	3.13	95	215	2.35	81
171	2.00	92	216	2.00	45
172	3.27	93	217	2.15	21
173	1.63	81	218	2.00	60
174	2.78	87	219	1.94	69
175	2.31	98	220	1.75	74
176	1.79	74	221	2.35	81
177	1.68	54	222	3.86	99
178	2.23	81	223	2.07	39
179	1.76	52	224	1.92	63
180	1.36	91	225	2.60	56
181	2.28	88	226	1.84	47
182	2.40	86	227	2.70	68
183	2.57	89	228	1.89	47
184	2.24	63	229	1.88	45
185	2.50	39	230	1.57	39
186	2.39	52	231	2.11	87
187	2.20	56	232	3.31	98
188	1.55	49	233	2.57	91
189	2.94	76	234	2.10	51
190	2.78	74	235	2.25	93
191	2.28	69	236	3.03	95
192	1.79	71	237	3.34	96
193	3.35	98	238	2.16	39
194	1.26	71	239	2.70	79
195	2.53	52	240	2.63	49
196	2.39	74	241	3.14	74
197	2.87	97	242	2.42	76

Appendix A - Continued

Student Number	CGPA	RI	Student Number	CGPA	RI
243	2.56	94	289	3.21	63
244	3.40	88	290	2.37	74
245	2.33	81	291	2.00	58
246	1.88	77	292	1.96	42
247	2.67	99	293	2.90	97
248	2.43	56	294	1.96	52
249	2.56	71	295	2.57	89
250	2.76	54	296	1.86	87
251	2.30	52	297	2.22	56
252	2.11	63	298	3.20	85
253	2.65	80	299	2.72	93
254	1.68	90	300	2.61	76
255	2.13	76	301	3.58	96
256	2.34	94	302	1.96	93
257	1.87	74	303	2.67	91
258	3.60	95	304	2.25	88
259	2.60	80	305	2.00	64
260	1.76	85	306	2.08	63
261	2.08	54	307	2.20	51
262	2.34	73	308	3.46	86
263	2.78	97	309	1.92	68
264	1.84	84	310	3.45	96
265	2.96	94	311	2.13	61
266	.82	61	312	2.33	88
267	2.58	89	313	3.00	77
268	2.24	56			
269	2.23	76			
270	2.33	80			
271	2.18	54			
272	1.70	58			
273	2.00	69			
274	1.51	88			
275	1.89	52			
276	2.13	40			
277	2.11	79			
278	2.17	87			
279	2.24	92			
280	2.09	61			
281	3.41	93			
282	2.48	97			
283	2.44	79			
284	2.21	77			
285	2.33	76			
286	2.10	66			
287	2.59	45			
288	1.64	47			

APPENDIX B

TABULATED RAW DATA OF

CUMULATIVE GRADE-POINT AVERAGES (CGPA) AND

READING INDEX SCORES (RI)

FOR

THE STUDENTS INCLUDED IN THIS STUDY

APPENDIX B

CUMULATIVE GRADE-POINT AVERAGES (CGPA) AND READING INDEX SCORES (RI) TABULATED RAW DATA OF THE STUDENT POPULATION INCLUDED IN THIS INVESTIGATION

N	Mean CGPA	Standard Deviation	Mean RI	Standard Deviation
313	2.34024	0.52814	72.57826	18.78525

APPENDIX C

AN EXPLANATION OF HOW THE READING INDEX IS DERIVED FROM THE FLORIDA TWELFTH GRADE TEST

A READING INDEX SCORE FOR THE TWELFTH GRADE PROGRAM FOR THE FALL 1967

Without any additional testing time or any modification in the administrative details for giving the test, it will be possible beginning with the Fall 1967 Program to provide an index of reading ability as a supplementary score from the basic battery.

This score will be reported in percentile ranks obtained in the same way as the ranks are for the five tests (aptitude, English, social studies, natural sciences, and mathematics) in the basic battery.

The total score used as one measure for qualifying for admission to a state university in Florida will be obtained from the five basic tests as in the past. In other words, the supplemental test will make no change in the total score. Indirectly it will be involved in the total score because it is derived solely from the tests in the basic battery.

The reading index will be obtained from a composite of the verbal portion of the aptitude test, the English test, and the social studies test. To this composite score, the verbal part of the aptitude test will contribute about 40%, the English test about 35%, and the social studies test about 25%. Some validity studies involving several junior colleges in Florida indicate that there would be a high correlation between the reading index obtained in the fashion indicated and regular tests of reading.

This supplementary score being provided in the Fall of 1967 will be useful in identifying students who may need additional testing for diagnosis of reading difficulties. Thus, reference to the new supplemental score may make it possible to reduce the amount of testing beyond the Twelfth Grade battery to a small segment of incoming freshmen, whereas previously the entire group was tested for possible weakness that will now be covered by the supplemental score.

Board of University Examiners
Gainesville, Florida
April 1967