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ABSTRACT

To determine whether achievement on selected stenographic and personality tests is a predictive measure of job success when the employee is evaluated using the Minnesota Satisfactoriness Scales as a method of measuring job performance, this study tested 300 stenographic and secretarial majors in Alabama State technical institutions and junior colleges, and 123 graduates employed as stenographers or secretaries. Using statistical analysis of the data, it was concluded that the National Business Entrance Stenographic Test and four of the 16 personality traits as measured by the 16 P.F. Personality Test are predictors of job success when using the Minnesota Satisfactoriness Scales. To analyse the data, researchers used correlation, analysis of variance, statistical "t", and chi square statistical analysis. (Author)

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U. S. DEPARTMENT OF
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The educational research and development activities reported herein were performed pursuant to Contract No. OEG-4-9-100014-0020-057 with the Office of Education, U. S. Department of Health, Education and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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SUMMARY

The primary purpose of this study was to determine if achievement on the National Business Entrance Stenographic Test, Form 20-56 and the Visual Speed and Accuracy Test, Form A, and certain personality traits as measured by the 16 P.F. Personality Test, Forms A and B, were predictive measures of job success when the employee was evaluated by the employer using the Minnesota Satisfactoriness Scales as a method of measuring job performance.

Related purposes of the study were to determine if educational background and institutional characteristics had any relationship to (1) achievement on the National Business Entrance Stenographic Test, (2) the degree of job success experienced by students when evaluated by his employers using the Minnesota Satisfactoriness Scales, and (3) employment in stenographic and secretarial and non-related job positions.

The study involved 300 persons who were stenographic and secretarial majors in Alabama state technical institutions and junior colleges. One hundred and fifty-five students from nineteen technical institutions and 145 students from thirteen junior colleges were tested in April and May of 1969. Of the 300 participants, sixty-five were students from seven predominately non-white schools.

The 300 participants consisted of all the June and August stenographic and secretarial graduates from the Alabama state technical institutions and junior colleges except those from six technical institutions and two junior colleges who either did not have a stenographic or secretarial program or did not have students graduating in those areas in 1969. Each student was administered The National Business Entrance Stenographic Test, Form 20-56, the Visual Speed and Accuracy, Form A, and the 16 P.F. Personality Test, Forms A and B.

Ninety-nine employers of 123 graduates employed as stenographers or secretaries evaluated the performance of the graduates using the Minnesota Satisfactoriness Scales.

The statistical analysis used in the study to analyze data were: (1) correlation, (2) analysis of variance, (3) statistical "t", and (4) chi square.

The most significant findings of the study were as follows:

1. Of the 249 graduates who returned questionnaire, 143 (57 per cent) were employed in stenographic, secretarial or related positions.

2. Students who scored significantly higher on factor B+ of the 16 P.F. (more intelligent) received significantly higher job success scores.

3. Students who scored significantly higher on factor C+ of the 16 P.F. (emotionally stable) received significantly higher job success scores.

4. Students who scored significantly higher of factor I+ of the 16 P.F. (tender-minded) received significantly higher job success scores.

5. Students who scored significantly higher on factor H- of the 16 P.F. (shy) received significantly higher job success scores.

6. Students who scored significantly higher on the National Business Entrance Stenographic Test received significantly higher job success scores.

7. The most significant personality factor for predicting job success was shyness.

8. The second most significant personality factor for predicting job success was tender-mindedness.

9. Students from predominately white schools scored significantly lower on the National Business Entrance Stenographic Test than these students who graduated from a predominately non-white school.

10. Graduates of junior colleges received significantly higher job success scores than those graduating from technical schools.

In summary, it can be concluded that the National Business Entrance Stenographic Test and four of the sixteen personality traits as measured by the 16 P.F. Personality Test are predictors of job success, when using the Minnesota Satisfactoriness Scales.

INTRODUCTION

For many centuries man has placed an emphasis on degrees of order and systems of measurement as they apply to his environment. However, it was not until the early part of the twentieth century that a degree of order and systems of measurement began to show themselves in the educational system of the United States. The first Binet intelligence tests were administered to school children in 1920. Standardized achievement tests were devised about the same time, exemplified by Buckingham's spelling tests, and Stone's arithmetic tests.[1]

In the middle 1930's American businessmen began an economic recovery from the depression of 1929. The nature of business and the introduction of sophisticated office machines indicated a need for measuring vocational ability, consequently, business educators suggested that reliable and valid tests be devised to ascertain the clerical abilities of a student prior to his placement on a particular job.[2]

In the 1940's and 1950's business educators and administrators became increasingly aware of the urgent needs for finding realistic methods of measuring vocational competence and, if possible, predicting job success.

Popham, in Chapter V of the 1950 American Business Education Yearbook, synthesized a discussion on testing for stenographic competence by indicating the importance of "developing criteria for measuring stenographic competence in terms of what stenographers actually do in the office, not in terms of teachers' learning standards." She concluded that:

1. More attention be given to research about the nature of office dictation and office production standards.

2. More attention be given to measurements of qualities comprising the "employable personality."

3. Teachers go beyond learning standards to job standards in measuring stenographic competence and provide tests and teaching materials which are based as nearly as possible upon real stenographic situations.[3]

In 1962 a panel of consultants on vocational education was convened at President Kennedy's request to review past vocational education legis-

lation and to make recommendations for future legislative improvement and redirection. The panel reported in November of the same year that a large portion of vocational and trade school graduates had to undergo additional vocational preparation or enter the workforce in an area other than that for which they had been prepared. The panel sought a solution which would ensure that vocational education would be more adaptive than it had been in the past to the economy's requirement for prepared manpower. In its final report, the panel stressed that "education for occupational competency be carefully correlated with the possibility for employment."[4] The recommendations of the panel were eventually incorporated into the Vocational Education Act of 1963, signed into law by President Lyndon B. Johnson on December 18, 1963.

It was difficult for legislators to remain complacent when in March, 1963--a time of affluence--more than three-quarters of a million men and women between the ages of 16 and 19 were unable to find employment.[5]

Between 1962 and 1965, the net annual increase in the labor force averaged about three-quarters of a million persons a year. While the annual increase was expected to remain fairly constant, the number of persons available for work was expected to reach 1.4 million a year by 1970. Obviously the relationship between the annual increase in the labor force and the number of persons annually available for work effects the ratio of unemployment. For most of these prospective workers the quality of their preparation for the new and expanding areas of employment would mean the difference between work and unemployment.[5]

The degree of success that vocational education institutions have in preparing young men and women for industry will depend, to a considerable extent, upon how realistic vocational educators are in the evaluation of their programs and students. Businessmen and educators must agree on standards of performance and excellence if they are going to eliminate additional vocational preparation and unqualified operatives.

Vocational educators must keep abreast of changes in technology and employment standards in order that changes in curriculum and individual course content can be adjusted to meet job specifications. If vocational educators meet the challenges of evaluation and change, then--and only then--will they be able to return the gauntlet to the critics who charge that vocational schools are geared "to teaching the archaic skills of the 1930's rather than the realistic skills of the 1960's."[6]

The Problem

There are no proficiency requirements or standards of achievement prescribed for stenographic and secretarial graduates of state technical schools and junior colleges. Proficiency goals are set by individual instructors and may or may not be consistent with expectations of employers.

With the absence of unified standards, or some predictive measurement of employability, the probability existed that many stenographic and secretarial graduates from technical institutes and junior colleges have attempted to enter the work force possessing less than minimal proficiency requirements. While it is conceivable that some of those students have found employment in the area in which they were prepared, it is also unlikely that they will be able to change employers or seek advancement without additional vocational preparation. In short, industry and business educators have attempted to establish realistic minimum standards for entry into the work force, and for promotion without additional vocational preparation. Stenographic and secretarial preparation for employability must therefore be designed to meet realistic national standards rather than the standards of an individual teacher, company, or community.

Purposes of the Study

The primary purpose of this study was to determine if success on the Visual Speed and Accuracy Test, Form A, achievement on the National Business Entrance Stenographic Test, Form 20-56, and certain personality traits as measured by the 16 P.F. Personality Test, Forms A and B, were predictive measures of job success when the employee was evaluated by the employer using the Minnesota Satisfactoriness Scales as a method of measuring job performance.

Related purposes of the study were to determine if there was any significant congruency or relationship between age, the amount of secondary school shorthand and typewriting instruction, length of the post secondary school business program, graduation from a technical school or junior college, and graduation from a predominately white or a predominately non-white institution and (1) achievement on the National Business Entrance Stenographic Test, (2) the degree of job success experienced by a student when he was evaluated by the employer using the Minnesota Satisfactoriness Scales as a method of measuring job performance, and (3) employment in stenographic and secretarial and other non-related positions.

It was not anticipated that the findings of the investigation would reveal a need for changing minimum stenographic or secretarial standards. It was hoped, however, that certain variables in the study would prove to be predictive measures of job success and could thus be used with the concept of minimum standards in establishing meaningful stenographic and secretarial curricula.

METHOD

Scope

This study involved the 1969 stenographic and secretarial graduates of the Alabama state technical institutions and junior colleges. There were one hundred and fifty-five students from nineteen technical institutions and one hundred and forty-five students from thirteen junior colleges who participated in the investigation (Figure 1). Six technical institutions and two junior colleges did not participate in the study because they did not have any students graduating in stenographic or secretarial programs in 1969.

The study was concerned only with the isolation and relationship of personal characteristics of the students and the effect these characteristics may have on job success in stenographic and secretarial positions.

The approach to this investigation was basically ex post facto. Kerlinger stated that:

> Ex post facto research may be defined as that research in which the independent variable or variables have already occurred and in which the research starts with the observation of a dependent variable or variables.[7]

An investigation involving a student "follow-up" criterion normally utilizes an ex post facto research design since the research was attempting to arrive at some measure of impact of the treatment on the subsequent behavior or status of the students.[8]

It was not the purpose of this study to examine individual differences of students, but conversely, to examine commonalities of characteristics in relation to successful performance on the job.

It was recognized that research in an area dealing with the personal characteristics of students could be extremely complex and that certain uncontrolled variables could affect the results of the investigation. Any generalizations or conclusions derived from the findings of this study should therefore be weighed with this limitation in mind.

Hypotheses

Hypotheses for the investigation were:

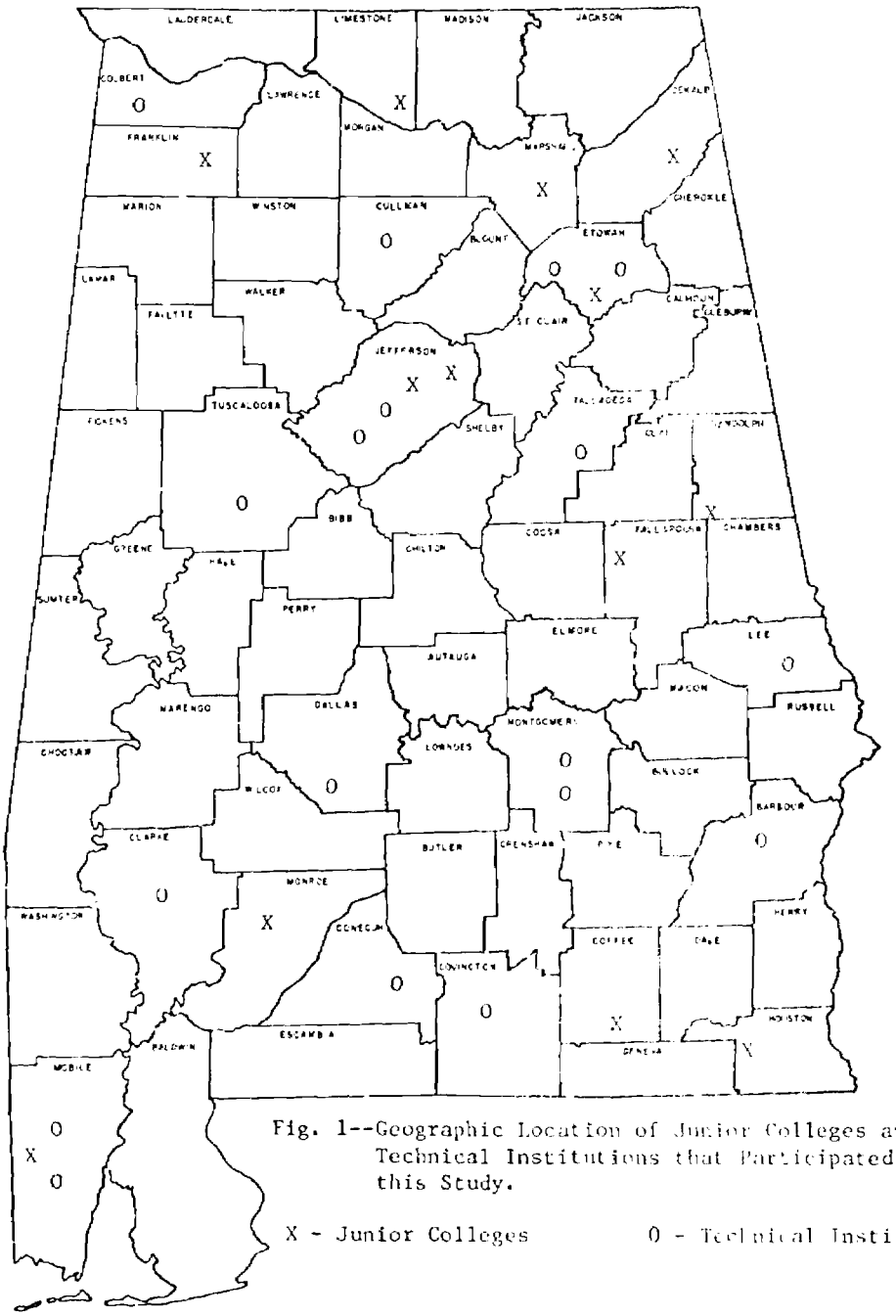

Fig. 1--Geographic Location of Junior Colleges and Technical Institutions that Participated in this Study.

X - Junior Colleges 0 - Technical Institutes

Ho1--There will be no significant relationship at the .05 level of probability between job success and achievement score on the National Business Entrance Stenographic Test.

Ho2--There will be no significant relationship at the .05 level of probability between graduation from a technical institution or a junior college and achievement score on the National Business Entrance Stenographic Test.

Ho3--There will be no significant relationship at the .05 level of probability between achievement score on the National Business Entrance Stenographic Test and graduation from a predominately white or a predominately non-white institution.

Ho4--There will be no significant relationship at the .05 level of probability between job success and achievement score on the Visual Speed and Accuracy Test.

Ho5--There will be no significant relationship at the .05 level of probability between job success and the age of the graduates.

Ho6--There will be no significant relationship at the .05 level of probability between job success and the amount of shorthand instruction a student received in secondary school.

Ho7--There will be no significant relationship at the .05 level of probability between job success and the amount of typewriting instruction a student received in secondary school.

Ho8--There will be no significant relationship at the .05 level of probability between job success and the length of the post secondary school business program completed by the student.

Ho9--There will be no significant relationship at the .05 level of probability between job success and graduation from a technical institution or junior college.

Ho10--There will be no significant relationship at the .05 level of probability between job success and graduation from a predominately white or a predominately non-white institution.

Ho11--There will be no significant relationship at the .05 level of probability between personality factor A (reserved-outgoing) and job success.

Ho12--There will be no significant relationship at the .05 level of probability between personality factor B (less intelligent--more intelligent) and job success.

Ho13--There will be no significant relationship at the .05 level of probability between personality factor C (affected by feelings--emotionally stable) and job success.

Ho14--There will be no significant relationship at the .05 level of probability between personality factor E (humble--assertive) and job success.

Ho15--There will be no significant relationship at the .05 level of probability between personality factor F (sober--happy-go-lucky) and job success.

Ho16--There will be no significant relationship at the .05 level of probability between personality factor G (expedient--conscientious) and job success.

Ho17--There will be no significant relationship at the .05 level of probability between personality factor H (shy--venturesome) and job success.

Ho18--There will be no significant relationship at the .05 level of probability between personality factor I (tough-minded--tender-minded) and job success.

Ho19--There will be no significant relationship at the .05 level of probability between personality factor L (trusting-suspicious) and job success.

Ho20--There will be no significant relationship at the .05 level of probability between personality factor M (practical--imaginative) and job success.

Ho21--There will be no significant relationship at the .05 level of probability between personality factor N (forthright--shrewd) and job success.

Ho22--There will be no significant relationship at the .05 level of probability between personality factor O (placid--apprehensive) and job success.

Ho23--There will be no significant relationship at the .05 level of probability between personality factor Q_1 (conservative--experimentive) and job success.

Ho24--There will be no significant relationship at the .05 level of probability between personality factor Q_2 (group-dependent--self-sufficient) and job success.

Ho25--There will be no significant relationship at the .05 level of probability between personality factor Q_3 (undisciplined self-conflict--controlled) and job success.

Ho26--There will be no significant relationship at the .05 level of probability between personality factor Q_4 (relaxed--tense) and job success.

Ho27--There will be no significant difference at the .05 level of probability between the achievement scores on the National Business Entrance Stenographic Test for graduates of technical schools and junior colleges.

Ho28--There will be no significant difference at the .05 level of probability between job success scores for graduates of technical schools and junior colleges.

Ho29--There will be no significant difference at the .05 level of probability between the achievement scores on the National Business Entrance Stenographic Test for graduates of predominately non-white and white institutions.

Ho30--There will be no significant difference at the .05 level of probability between job success scores for graduates of predominately non-white and white institutions.

Ho31--There will be no significant difference at the .05 level of probability in the observed frequency of employment in stenographic and secretarial positions and employment in other positions for graduates of technical schools and junior colleges.

Ho32--There will be no significant difference at the .05 level of prooability in the observed frequency of employment in stenographic and secretarial positions and employment in other positions for graduates of predominately non-white and white institutions.

Data Collection

One hundred and fifty-five students from nineteen technical institutions and one hundred and forty-five students from thirteen junior colleges were tested in April and May of 1969. Of the three hundred participants, sixty-five students from seven predominately non-white schools participated in the investigation. The sample consisted of all the June and August stenographic and secretarial graduates from the Alabama state technical institutions and junior colleges except those from six technical institutions and two junior colleges who either did not have a stenographic or secretarial program or did not have students graduating in those areas in 1969.

In February and March of 1969 the investigator visited all of the schools participating in the study. Meetings were held with each of the business education department heads to explain the nature of the study and the testing procedures.

In April and May of 1969 each student who participated in the study was administered The National Business Entrance Stenographic Test, Form 20-56, the Visual Speed and Accuracy, Form A, and the 16 P.F. Personality Test, Forms A and B. The completed tests were returned to the investigator and were in turn submitted to the appropriate national grading offices for evaluation and scoring.

In January of 1970 the graduates who participated in the study were mailed a letter in which they were asked to complete and return a Student Information Sheet (Appendix A). The same letter marked "second" or "third" request was sent to nonrespondents in February and March of 1970.

In April of 1970 the employers of graduates employed as stenographers or secretaries were mailed a letter and asked to evaluate the performance of the employee who had participated in the study, using the Minnesota Satisfactoriness Scales as a method of measurement (Appendix B). The same letter marked "second request" was sent to nonrespondents approximately two weeks after the first letter was mailed.

Instruments

The following instruments were selected for use in the study:

(1) The Sixteen Personality Factor Questionnaire: This personality questionnaire, originally developed by Raymond B. Cattell and Herbert W. Eber[9] in 1949 with the latest revision in 1967, was designed for ages sixteen and above to measure sixteen independent and distinct traits which affect the total overt personality (Appendix C). The development of the 16 P.F. questionnaire was based on "...factor analytic research showing that the separate traits or dimensions of personality which the test claims to measure are real, functionally unitary, and psychologically significant dimensions."

To obtain a thorough analysis of the total personality, Forms A and B of the 16 P.F. were used. Each form contained 187 items and took approximately forty minutes per form to administer.

Cattell and Eber have reported that reliability coefficients for Forms A and B were obtained by using the split-half technique with 450 young adult males. The coefficients for each of the sixteen dimensions of personality ranged from a low of .71 to a high of .93.

The items in the 16 P.F. questionnaire were selected from thousands of items originally used. Final selection of the items was made on the basis of those items which continued to have "...significant validity against the factors after three successive factor analyses."[10] The construct mean validity for forms A and B ranges from a low of .73 to a high of .96.

(2) The National Business Entrance Stenographic Test, Form 20-56: This evaluation instrument is one of a series of six tests developed and

distributed by the National Business Education Association. The tests were designed to measure the employability of business education students who have completed, or nearly completed, courses in preparation for employment in one or more of five basic office positions. These positions are: bookkeeping, general office clerical (including filing), machine calculation, stenography, and typewriting. The designers of the tests have attempted to develop them so they would simulate actual office experiences.

The editors of the National Business Entrance Tests have stated that the purpose of the National Business Entrance Stenographic Test is to "measure ability to take dictation and transcribe under office conditions." The test consisted of nine letters dictated at 80 words a minute. The total time allowed for dictation, pauses, and redictation was twenty minutes. Sixty minutes were allowed to typewrite an original and one or two carbons of each letter. This required a typewriting rate of only about 20 words a minute. [10]

If a student scores 50 or above on the stenographic test he receives a regular proficiency rating. This means that the student should be interviewed and considered for employment as a stenographer or secretary. A superior rating is awarded to those students who score 93 or above on the test. The superior rating indicates that the student is extremely proficient and is recommended for employment as a stenographer or secretary. [10]

(3) The Visual Speed and Accuracy Test, Form A: This test was a five minute one hundred and fifty item test modeled after the Minnesota Clerical Test.

The test was composed of various mixtures of digits, letters, and other familiar typewriting symbols. The person taking the test was asked to indicate if the number or letter sequences are the same or different.

Alternate-form and test-retest coefficients indicate a reliability of .84 to .87 and a validity of .48. A table of median scores from three hundred and eleven employed secretaries who took this test offers a mean score of 107.0 out of a possible 150. [11]

(4) The Minnesota Satisfactoriness Scales instrument was developed at the University of Minnesota by Dennis L. Gibson.

The scale was comprised of a twenty-eight item rating questionnaire (Appendix D) designed to assess the satisfactoriness of an individual as an employee. The employee is rated on each of the twenty-eight items as "better than," "about the same as," or "not as good as" his fellow employees. [12]

All raw scores on the Minnesota Satisfactoriness scales were converted to percentile scores. "A raw score of 25 and below was considered as unsatisfactory, 26 through 49 somewhat satisfactory, 50 through 74 definitely satisfactory, and 75 and above as very satisfactory."

Reliability correlations of the General Satisfactoriness Scales range from .74 to .90. The general criterion for establishing validity of the Minnesota Satisfactoriness Scales was job tenure. Among satisfied workers, those who rated above the median on performance were more likely to continue on the job over a two-year interval than were those rated below the media.

Data Analysis

The statistical tools used in this study consisted of multivariate analysis techniques: namely: (1) correlation, (2) analysis of variance, (3) the t test, and (4) chi square.

The first analytical procedure consisted of a simple intercorrelation matrix to show the relationship among all the independent and dependent variables to be considered in the study. Pearson "r's" were obtained from the correlation matrix and used to test the statistical relationship between the variables in the null hypothesis.

The second analytical procedure consisted of an analysis of variance, which yielded an F ratio to test statistical relationships of the variables by the method of coefficients of multiple correlation.

Other analyses consisted of utilizing the t test and chi square to provide a test for significant differences between mean scores and observed frequencies.

FINDINGS

The study involved three hundred persons who were stenographic and secretarial students in Alabama state technical institutions and junior colleges. One hundred and fifty-five students from nineteen technical institutions and one hundred and forty-five students from thirteen junior colleges were tested in April and May of 1969. Of the three hundred participants, sixty-five were students from seven predominately non-white schools.

Of those persons who participated in the study, fifty-one participants did not return the Student Information Sheet. One hundred and twenty-three participants were employed as secretaries. Fifty-three participants were employed in jobs other than secretarial, (Table 1) and seventy-three participants were unemployed.

Table 1. Jobs Other Than Secretarial Held by Students Who Participated in This Study.

Number of Students	Job Title
10	Clerk Typist
7	Keypunch Operator
7	Bookkeeper
6	Retail Clerk
4	Payroll Clerk
3	Receptionist
3	Machine Operator
2	Telephone Operator
2	Bank Teller
2	Retail Cashier
2	Teaching Aid
2	Waitress
1	Switchboard Operator
1	Shirt Folder
1	Cake Wrapper
Total 53	

In order to reject or not reject the null hypotheses of this study a coefficient of correlation analysis was used to determine the relationship that existed between two variables. Analysis of variance using coefficients of multiple correlation was used to determine the best combinations of variables for predicting job success. The t test and chi square were used to test for significant differences between means and observed frequencies.

Coefficient Correlation Analysis

The following were the coefficient correlation analyses of the null hypotheses of the study using the Pearson product "r" to reject or not reject each hypothesis:

Null Hypothesis No. 1.--There will be no significant relationship at the .05 level of probability between job success and achievement score on the National Business Entrance Stenographic Test.

The coefficient of correlation "r" of 0.177 between the achievement score on the National Business Entrance Test and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 1 was not rejected.

Null Hypothesis No. 2.--There will be no significant relationship at the .05 level of probability between graduation from a technical institution or a junior college and achievement score on the National Business Entrance Stenographic Test.

The coefficient of correlation "r" of 0.062 between the achievement score on the National Business Entrance Test and job success did not exceed the critical value of "r" ± 1946 at the .05 level of significance. Hence, null hypothesis No. 2 was not rejected.

Null Hypothesis No. 3.--There will be no significant relationship at the .05 level of probability between achievement score on the National Business Entrance Stenographic Test and graduation from a predominately white or a predominately non-white school.

The coefficient of correlation "r" of 0.198 between the achievement score on the National Business Entrance Test and job success did exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 3 was rejected.

Null Hypothesis No. 4.--There will be no significant relationship at the .05 level of probability between job success and achievement score on the Visual Speed and Accuracy Test.

The coefficient of correlation "r" of 0.113 between the achievement score on the Visual Speed and Accuracy Test and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 4 was not rejected.

Null Hypothesis No. 5.--There will be no significant relationship at the .05 level of probability between job success and the age of the graduates.

The coefficient of correlation "r" of -0.073 between the age of the graduates and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 5 was not rejected.

Null Hypothesis No. 6.--There will be no significant relationship at the .05 level of probability between job success and the amount of shorthand instruction a student received in secondary school.

The coefficient of correlation "r" of -0.182 between the amount of shorthand instruction a student received in secondary school and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 6 was not rejected.

Null Hypothesis No. 7.--There will be no significant relationship at the .05 level of probability between job success and the amount of typewriting instruction a student received in secondary school.

The coefficient of correlation "4" of -0.088 between the amount of typewriting instruction a student received in secondary school and job success did not exceed "r" ± .1946 at the .05 level of significance. Hence, null hypothesis No. 7 was not rejected.

Null Hypothesis No. 8.--There will be no significant relationship at the .05 level of probability between job success and the length of the post secondary school business program completed by the student.

The coefficient of correlation "r" of -0.094 between the length of the post secondary school business program completed by the student and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 8 was not rejected.

Null Hypothesis No. 9.--There will be no significant relationship at the .05 level of probability between job success and graduation from a technical institution or junior college.

The coefficient of correlation "4" of 0.129 between graduation from a technical institution or junior college and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 9 was not rejected.

Null Hypothesis No. 10.--There will be no significant relationship at the .05 level of probability between job success and graduation from a predominately white or a predominately non-white school.

The coefficient of correlation "r" of 0.126 between graduation from a predominately white or a predominately non-white school and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 10 was not rejected.

Null Hypothesis No. 11.--There will be no significant relationship at the .05 level of probability between personality factor A (reserved--outgoing) and job success.

The coefficient of correlation "r" of 0.121 between personality factor A and job success did not exceed the critical value of "r" ±.1946

at the .05 level of significance. Hence, null hypothesis No. 11 was not rejected.

Null Hypothesis No. 12.--There will be no significant relationship at the .05 level of probability between personality factor B (less intelligent--more intelligent) and job success.

The coefficient of correlation "r" of 0.218 between personality factor B (less intelligent--more intelligent) and job success did exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 12 was rejected.

Null Hypothesis No. 13.--There will be no significant relationship at the .05 level of probability between personality factor C (affected by feelings--emotionally stable) and job success.

The coefficient of correlation "r" of 0.236 between personality factor C (affected by feelings--emotionally stable) and job success did exceed the critical value of "4" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 13 was rejected.

Null Hypothesis No. 14.--There will be no significant relationship at the .05 level of probability between personality factor E (humble--assertive) and job success.

The coefficient of correlation "r" of 0.007 between personality factor E (humble--assertive) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 14 was not rejected.

Null Hypothesis No. 15.--There will be no significant relationship at the .05 level of probability between personality factor F (sober--happy-go-lucky) and job success.

The coefficient of correlation "r" of -0.030 between personality factor F (sober--happy-go-lucky) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 15 was not rejected.

Null Hypothesis No. 16.--There will be no significant relationship at the .05 level of probability between personality factor G (expedient--conscientious) and job success.

The coefficient of correlation "r" of 0.135 between personality factor G (expedient--conscientious) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 16 was not rejected.

Null Hypothesis No. 17.--There will be no significant relationship at the .05 level of probability between personality factor H (shy--venturesome) and job success.

The coefficient of correlation "r" of -0.029 between personality factor H (shy--venturesome) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 17 was not rejected.

Null Hypothesis No. 18.--There will be no significant relationship at the .05 level of probability between personality factor I (tough-minded--tender-minded) and job success.

The coefficient of correlation "r" of 0.258 between personality factor I (tough-minded--tender-minded) and job success did exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 18 was rejected.

Null Hypothesis No. 19.--There will be no significant relationship at the .05 level of probability between personality factor L (trusting--suspicious) and job success.

The coefficient of correlation "r" of -0.155 between personality factor L (trusting--suspicious) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 19 was not rejected.

Null Hypothesis No. 20.--There will be no significant relationship at the .05 level of probability between personality factor M (practical--imaginative) and job success.

The coefficient of correlation "r" of 0.093 between personality factor M (practical--imaginative) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 20 was not rejected.

Null Hypothesis No. 21.--There will be no significant relationship at the .05 level of probability between personality factor N (forthright--shrewd) and job success.

The coefficient of correlation "r" of -0.035 between personality factor N (forthright--shrewd) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 21 was not rejected.

Null Hypothesis No. 22.--There will be no significant relationship at the .05 level of probability between personality factor O (placid--apprehensive) and job success.

The coefficient of correlation "r" of -0.108 between personality factor O (placid--apprehensive) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 22 was not rejected.

Null Hypothesis No. 23.--There will be no significant relationship at the .05 level of probability between personality factor Q_1 (conservative--experimentive) and job success.

The coefficient of correlation "r" of -0.057 between personality factor Q_1 (conservative--experimentive) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 23 was not rejected.

Null Hypothesis No. 24.--There will be no significant relationship at the .05 level of probability between personality factor Q_2 (group-dependent--self-sufficient) and job success.

The coefficient of correlation "r" of 0.010 between personality factor Q_2 (group-dependent--self-sufficient) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 24 was not rejected.

Null Hypothesis No. 25.--There will be no significant relationship at the .05 level of probability between personality factor Q_3 (undisciplined self-conflict--controlled) and job success.

The coefficient of correlation "r" of 0.113 between personality factor Q_3 (undisciplined self-conflict--controlled) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 25 was not rejected.

Null Hypothesis No. 26.--There will be no significant relationship at the .05 level of probability between personality factor Q_4 (relaxed--tense) and job success.

The coefficient of correlation "r" of -0.092 between personality factor Q_4 (relaxed--tense) and job success did not exceed the critical value of "r" ±.1946 at the .05 level of significance. Hence, null hypothesis No. 26 was not rejected.

Analysis of Variance

The second statistical analysis used was analysis of variance which yielded an F ratio to test the statistical relationships of the variables by the method of coefficients of multiple correlation.

The data illustrating the multiple correlations among the sixteen personality factors when compared with job success are presented in Table 2. The correlations are arranged in the table in descending order with the most significant of the personality factors placed first. The most significant single personality factor for predicting job success when considering all sixteen factors was factor H (shy--venturesome). The factor H appears first in the table with a multiple correlation of -6.4511. The next most significant factor was factor I (tough-minded--tender minded) with a multiple correlation of 4.0640. Both factors H and I exceeded the critical value of F ±3.94 (df 1/98) at .05 level of significance. The multiple correlation of all sixteen factors as a predictive measure of job success was .524. The multiple correlation for all sixteen factors did not exceed the critical value of ±.177 (df 16/83) at .05 level of significance.

Table 2. Coefficients of Multiple Correlation Between the 16 P.F. Analysis Questionnaire Factors and Job Success.

Variable Number	Most Significant Variable	F	df
1	H	*-6.4511	1/98
2	I	* 4.0640	1/98
3	C	3.7407	1/98
4	Q_2	-3.1828	1/98
5	B	1.9116	1/98
6	E	1.1302	1/98
7	M	1.1246	1/98
8	A	0.6802	1/98
9	G	-0.6132	1/98
10	F	-0.5445	1/98
11	O	-0.3676	1/98
12	N	-0.3332	1/98
13	Q_3	0.2007	1/98
14	Q_4	0.0399	1/98
15	L	-0.0036	1/98
16	Q_1	-0.0021	1/98
	All Factors	1.5244	16/83

*Significant at .05 level.

The data illustrating the multiple correlations among the score on the National Business Entrance Stenographic Test, the score on the Visual Speed and Accuracy Test, age, amount of secondary business program, and graduation from a technical school or junior college when

compared with job success are presented in Table 3. The correlations were arranged in this table in descending order, with the most significant of the variables placed first. The most significant variable for predicting job success when considering all seven variables was variable No. 1, score on the National Business Stenographic Test, with a multiple correlation of 4.9850 which exceeded the critical value of F ±3.94 (df 1/98) at the .05 level of significance. The multiple correlation of all seven variables was 2.1547 which exceeded the critical value of ±2.10 (df 7/92) at .05 level of significance.

Table 3. Coefficients of Multiple Correlation Between the Score on the National Business Entrance Stenographic Test and Variables as Indicated.

Variable Number	Variable Identification	F	df
1	Score on National Business Entrance Test	*4.9850	1/98
2	Amount of Secondary School Shorthand	±4.3682	1/98
3	Graduation from a Junior College	3.1069	1/98
4	Length of Post Secondary Business Program	-2.1971	1/98
5	Amount of Secondary School Typewriting	-0.2895	1/98
6	Age	-0.1333	1/98
7	Score Visual Speed and Accuracy Test	0.0027	1/98
	All Variables	*2.1547	7/92

*Significant at .05 level.

Statistical "t"

The statistical "t" was used to reject or not reject other hypotheses.

The statistical "t" for the selected population and sample means of the several factors (Table 4) revealed no significant difference.

Null Hypothesis No. 27.--There will be no significant difference at the .05 level of probability between achievement on the National Business Entrance Stenographic Test for graduates of technical schools and junior colleges.

The statistical "t" between the mean scores of the two groups did not exceed the critical value of 1.960 at the .05 level of significance. Hence, null hypothesis No. 27 was not rejected.

Table 4. Mean Scores of National Business Entrance Stenographic Test, Visual Speed and Accuracy Test, and Selected Portions of the Population.

Number of Students	Factor	$\bar{x}$ NBET[1]	$\bar{x}$ VSA[2]
300	Population	30.0	96.0
123	Employed as Secretaries	32.7	96.4
126	Not Employed as Secretaries	29.6	97.5
51	Did Not Return Student Information Sheet	29.8	95.1
53	Employed - Not as A Secretary	31.3	99.0
73	Unemployed	30.6	96.7

[1]NBET - National Business Entrance

[2]VSA - Visual Speed and Accuracy Test

Null Hypothesis No. 28.--There will be no significant difference at the .05 level of probability between job success for graduates of technical schools and junior colleges.

The statistical "t" between the mean job success scores of the two groups (Table 5) did exceed the critical value of 1.960 at the .05 level of significance. Hence, null hypothesis No. 28 was rejected.

Null Hypothesis No. 29.--There will be no significant difference at the .05 level of probability between achievement on the National Business Entrance Stenographic Test for graduates of predominately non-white institutions and predominately white institutions.

The statistical "t" between the mean score (Table 5) of the two groups did exceed the critical value of 1.960 at the .05 level of significance. Hence, null hypothesis No. 29 was rejected.

Null Hypothesis No. 30.--There will be no significant difference at the .05 level of probability between job success for graduates of technical schools and junior colleges.

The statistical "t" between the mean job success scores of the two groups (Table 5) did not exceed the critical value of 1.960 at the .05 level of significance. Hence, null hypothesis No. 30 was not rejected.

Table 5. Mean Scores and Statistical "t's" for Group Comparison and Variables As Indicated.

Group Comparisons	Variables	Mean Scores	"t"	df
Technical Institutes	NBET[1]	31.02	.84	298
Junior Colleges		29.01		
Technical Institutes	JSC[2]	64.62	*3.23	98
Junior Colleges		70.08		
Predominately Non-White Institutions	NBET[1]	37.08	*2.92	298
Predominately White Institutions		28.10		
Predominately Non-White Institutions	JSC[2]	63.38	.98	98
Predominately White Institutions		67.82		

[1]NBET - National Business Entrance Test

[2]JSC - Job Success Score

*Significant at .05 level

Chi Square

The chi square was used with frequency data to reject or not reject hypotheses.

Null Hypothesis No. 31.--There will be no significant difference at the .05 level of probability in the number of graduates employed in

stenographic and secretarial positions and other types of employment from technical schools and junior colleges.

The chi square value between the frequencies of the two groups (Table 6) did not exceed the value of 3.841 at the .05 level of significance. Hence, null hypothesis No. 31 was not rejected.

Table 6. Frequency and Chi Square Values for Group Comparison and Variables As Indicated.

Group Comparison	Employment		χ^2	df
	Stenographic Number	Non-Stenographic Number		
Technical Institutes	64	27	.015	1
Junior Colleges	59	26		
Predominately Non-White Institutions	20	14	2.45	1
Predominately White Institutions	103	39		

*Significant at .05 level

Null Hypothesis No. 32.--There will be no significant difference at the .05 level of probability in the number of graduates employed in stenographic and secretarial positions and other types of employment from predominately non-white institutions and predominately white institutions.

The chi square value between the frequencies of the two groups (Table 6) did not exceed the value of 3.841 at the .05 level of significance. Hence, null hypothesis No. 32 was not rejected.

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APPENDIX A

Student Information Sheet

Your name:_____

Address:_____City:_____State:_____

*Please check the appropriate square:

(1) I am presently employed as a secretary. ( )YES ( )NO

If the answer to question #1 was YES please complete the following:

Name of employer:_____

Address:_____City:_____State:_____

Name of immediate supervisor:_____

If the answer to question #1 was NO please check any of the following statements that apply to you:

( ) Unemployed but seeking employment as a secretary.

( ) Unemployed and not seeking employment as a secretary.

( ) Applied for but did not receive a secretarial position.

( ) Did not apply for a secretarial position.

( ) Presently employed but not in a secretarial position.
*If this square is checked please indicate the name of the job you are performing in the space provided below

_____

(2) Please check the length of time you spent in your school secretarial program.

( ) 6 mo. ( ) 9 mo. ( ) 12 mo. ( ) 18 mo. ( ) 24 mo.

(3) If you graduated from a junior college please indicate the nature of your program.

( ) 1 year certificate ( ) degree

(4) Please indicate how much typewriting and shorthand you completed in high school.

Typewriting ( ) none ( ) 1 yr. ( ) 2 yrs.

Shorthand ( ) none ( ) 1 yr. ( ) 2 yrs.

APPENDIX B

MINNESOTA SATISFACTORINESS SCALES

Employee Name_____No._____

Rated by_____Date_____

Please check the best answer for each question
Be sure to answer all questions

Compared to others in his work group, how well does he . . .	(1) not as well	(2) about the same	(3) better
1. follow company policies and practices?. . .	( )	( )	( )
2. accept the direction of his supervisor? . .	( )	( )	( )
3. follow standard work rules and procedures?..	( )	( )	( )
4. perform tasks requiring repetitive movements?	( )	( )	( )
5. accept the responsibility of his job? . . .	( )	( )	( )
6. adapt to changes in procedures or methods?	( )	( )	( )
7. respect the authority of his supervisor?. .	( )	( )	( )
8. respect the authority of his supervisor?. .	( )	( )	( )
9. get along with his supervisors?	( )	( )	( )
10. perform repetitive tasks?	( )	( )	( )
11. get along with his co-workers?.	( )	( )	( )
12. perform tasks requiring variety and change in methods?.	( )	( )	( )

Compared to others in his work group . . .	not as good	about the same	b
1. how good is the quality of his work?. . . .	( )	( )	(
2. how good is the quantity of his work? . . .	( )	( )	(

--please continue on other side--

Please check the best answer for each question
Be sure to answer all questions

If you could make the decision, would you. . .	(1) yes	(2) not sure	(3) no
1. give him a pay raise?.	( )	( )	( )
2. transfer him to a job at a higher level? . .	( )	( )	( )
3. promote him to a position of more responsibility?	( )	( )	( )

Compared to others in his work group, how often does he . . .	less	about the same	more
1. come late for work?.	( )	( )	( )
2. become overexcited?.	( )	( )	( )
3. become upset and unhappy?.	( )	( )	( )
4. need disciplinary action?.	( )	( )	( )
5. stay absent from work?	( )	( )	( )
6. seem bothered by something?.	( )	( )	( )
7. complain about physical ailments?.	( )	( )	( )
8. say 'odd' things?.	( )	( )	( )
9. seem to tire easily?	( )	( )	( )
10. act as if he is not listening when spoken to?	( )	( )	( )
11. wander from subject to subject when talking?	( )	( )	( )

Now will you please consider this worker with respect to his over-all competence, the effectiveness with which he performs his job, his proficiency, his general over-all value. Take into account all the elements of successful job performance, such as knowledge of the job and functions performed, quantity and quality of output, relations with other people (subordinates, equals, superiors), ability to get the work done, intelligence, interest, response to training, and the like. In other words, how closely does he approximate the ideal, the kind of worker you want more of? With all these factors in mind, where would you rank this worker as compared with the other people whom you now have doing the same work? (or, if he is the only one, how does he compare with those who have done the same work in the past?)

In the top 1/4. . . . . .

In the top half but not among the top 1/4 . . . . . .

In the bottom half but not among the lowest 1/4 . . . . . .

In the lowest 1/4 . . . . . .

APPENDIX C

PERSONALITY FACTORS MEASURED BY THE
16 P.F. TEST FORMS A AND B

FACTORS

A	Schizothymia A- (Reserved)	versus	Affectothymia A+ (Outgoing)
B	Lower Scholastic Mental Capacity B- (Less Intelligent)	versus	Higher Scholastic Mental Capacity B+ (More Intelligent)
C	Lower Ego Strength C- (Affected by Feelings)	versus	Higher Ego Strength C+ (Mature-Calm)
E	Submission E- (Humble)	versus	Dominance E+ (Assertive)
F	Desurgency F- (Sober)	versus	Surgency F+ (Happy-Go-Lucky)
G	Weaker Superego Strength G- (Expedient)	versus	Stronger Supergo Strength G+ (Conscientious)
H	Threctia H- (Shy)	versus	Parmia H+ (Venturesome)
I	Harria I- (Tough-minded)	versus	Premsia I+ (Tender-minded)
L	Alaxia L- (Trusting)	versus	Protension L+ (Suspicious)
M	Praxernia M- (Practical)	versus	Autia M+ (Imaginative)
N	Artlessness N- (Forthwright)	versus	Shrewdness N+ (Shrewd)
O	Untroubled Adequacy O- (Placid)	versus	Guilt Proneness N+ (Apprehensive)
Q_1	Conservatism Q_1- (Conservative)	versus	Radicalism Q_1+ (Experimenting)
Q_2	Group adherence Q_2- (Socially group dependent)	versus	Self-sufficiency Q_2+ (Self-sufficient)
Q_3	Low Integration Q_3- (Undisciplined Self-Conflict)	versus	High Self-Concept Control Q_3+ (Controlled)
Q_4	Low Ergic Tension Q_4- (Relaxed)	versus	High Ergic Tension Q_4+ (Tense)