AN IDENTIFICATION OF CERTAIN SIMILARITIES AND DIFFERENCES BETWEEN SUCCESSFUL AND UNSUCCESSFUL COLLEGE LEVEL BEGINNING SHORTHAND STUDENTS AND TRANSCRIPTION STUDENTS

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This is to certify that the

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ABSTRACT

AN IDENTIFICATION OF CERTAIN SIMILARITIES AND DIFFERENCES BETWEEN SUCCESSFUL AND UNSUCCESSFUL COLLEGE LEVEL BEGINNING SHORTHAND STUDENTS AND TRANSCRIPTION STUDENTS

by L. Michael Moskovis

Body of Abstract

The problem was to identify the similarities or differences on selected variables that may exist between successful and unsuccessful college level beginning shorthand students and successful and unsuccessful college level transcription students.

Seven public-supported Michigan institutions participated in this study. These included: three junior colleges, one four-year college, and three universities.

The subjects were female students enrolled in nine beginning shorthand classes and nine transcription classes during the winter and spring school terms of 1967.

Students who received a grade of A or B were classified as successful; students who received a grade of D or E were classified as unsuccessful. A total of 82 successful and 61 unsuccessful beginning shorthand students were identified; a total of 67 successful and 64 unsuccessful transcription students were identified.

Data were obtained through five standardized tests (California Psychological Inventory CPI; Brown-Holtzman Survey of Study Habits and Attitudes SSHA; Minnesota Clerical Test MCT; Watson-Glaser Critical Thinking Appraisal CTA; Wellesley Spelling Scale WSS), skill achievement tests, student questionnaires, and institution records.

Three statistical techniques were used to test the significance of any differences that were identified between the successful and unsuccessful students. The Student's t-test and the point-biserial correlation technique were used to analyze the continuous variables; the chi-square technique was used to analyze the discrete variables.

The successful and unsuccessful college level beginning shorthand students were found significantly different at the levels indicated by category or mean score in:

1. college major (.01)
2. college English composition grade (.001)
3. name checking, MCT (.001)
4. study habits and attitudes, SSHA (.001)
5. spelling ability, WSS (.001)
6. critical thinking, CTA (.001)
7. capacity for status, CPI (.02)
8. sense of well-being, CPI (.05)
9. responsibility, CPI (.001)
10. socialization, CPI (.02)
11. communality, CPI (.01)
12. self-control, CPI (.05)
13. achievement via conformance, CPI (.001)

14. achievement via independence, CPI (.05)
15. intellectual efficiency, CPI (.01)
16. psychological-mindedness, CPI (.02)
17. grade-point average (.001)
18. shorthand theory (.001)
19. shorthand brief forms (.001)
20. shorthand reading (.001)

No significant differences were found between the successful and unsuccessful college level beginning shorthand students at the .05 level by category or mean score in:

1. year in college
2. number of weeks of previous shorthand instruction
3. number checking, MCT
4. dominance, CPI
5. sociability, CPI
6. social presence, CPI
7. self-acceptance, CPI
8. tolerance, CPI
9. good impression, CPI
10. flexibility, CPI
11. femininity, CPI

The successful and unsuccessful college level transcription students were found significantly different at the levels indicated by category or mean score in:

1. college major (.01)
2. number of weeks of previous shorthand instruction (.01)

3. college English composition grade (.01)
4. transcription achievement at 80, 100, and 120 wam (.001)
5. spelling ability, WSS (.001)
6. critical thinking, CTA (.01)
7. grade-point average (.001)
8. typewriting accuracy (.05)
9. typewriting speed (.001)

No significant differences were found between the successful and unsuccessful college level transcription students at the .05 level by category or mean score in:

1. year in college
2. place of previous shorthand instruction
3. number of weeks of previous typewriting instruction
4. number of weeks of office work experience involving the use of a typewriter
5. transcription achievement at 60 wam
6. number checking, MCT
7. name checking, MCT
8. study habits and attitudes, SSHA
9. dominance, CPI
10. capacity for status, CPI
11. sociability, CPI
12. social presence, CPI
13. self-acceptance, CPI
14. sense of well-being, CPI
15. responsibility, CPI
16. socialization, CPI

17. self-control, CPI

18. tolerance, CPI

19. good impression, CPI

20. communality, CPI

21. achievement via conformance, CPI

22. achievement via independence, CPI

23. intellectual efficiency, CPI

24. psychological-mindedness, CPI

25. flexibility, CPI

26. femininity, CPI

A number of significant differences were identified between the successful and unsuccessful college level beginning shorthand students as related to the variables employed in this study.

There were few significant differences between the college level successful and unsuccessful transcription students. With a few exceptions, successful transcription achievement was apparently based on factors directly related to the transcription process and classroom achievement.

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by

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CHAPTER I

INTRODUCTION

The problem of who should and who should not enroll in shorthand has concerned business educators for many years.

As early as 1917, Herbert W. Rodgers attempted to prognosticate shorthand success by administering a series of tests to typewriting and shorthand students enrolled in the Extension Department at Columbia University. After analyzing his data, Rodgers expressed the hope that eventually a series of tests could be found which would yield a better criterion for vocational guidance and selection.[1] By 1947, Louis A. Leslie stated, "In the past thirty years, there have been something like a hundred recorded attempts to set up a prognostic test for shorthand, all of which have proved failures."[2]

Since that time, more research has been conducted in developing or determining methods of prognosticating shorthand learning success. In spite of many and varied investigations, however, the problem of high failures, high drop-out rates, and low achievement continues to plague shorthand teachers and guidance counselors.

Research indicates that the percentage of students who drop shorthand is high, ranging from 18 to 29 percent of the total beginning

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[1]Rodgers, Herbert W., "Psychological Tests for Stenographers and Typists," Journal of Applied Psychology, I (January, 1917), 268-74.

[2]Leslie, Louis A., "A Suggested Prognostic Test for Shorthand," American Business Education, IV (December, 1947), 91.

enrollment. Moreover, the percentage of students who fail shorthand is reported to be even higher--with the estimated failure rate to be as high as 50 percent.[3]

An additional problem now facing business educators is the amount of time required to train proficient office workers. This problem promises to become more pressing as instructional time and place continue to be evaluated in view of the growing knowledge explosion and the apparent need for more adequate preparation in the liberal arts.[4,5] Yet, the inadequacy of many vocationally-trained students is all too apparent--in spite of considerable and costly instructional effort and time.[6] In addition, such intangible factors as human frustration and vocational delay and disappointment cannot be estimated.

Many persons believe that the duties of the secretary-stenographer, while now generally consistent with those of the past, will become more demanding in administrative and leadership responsibilities.[7] Thus, it becomes urgent for business educators, particularly those preparing students who anticipate careers in business education or executive secretarial positions, to re-examine their selection procedures and to identify those areas of instruction that deserve special attention or emphasis.

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[3]Frink, Inez, "A Comprehensive Analysis and Synthesis of Research and Thought Pertaining to Shorthand and Transcription 1946-1957" (unpublished Doctoral dissertation, Indiana University, 1961), pp. 168-98.

[4]Douglas, Lloyd V., Business Education (Washington, D. C.: Center for Applied Research in Education, Inc., 1963), p. 92.

[5]Eyster, Elvin S., "The Case for Secretarial Education in Colleges," Journal of Business Education, XXXIX (November, 1963), 48-50.

[6]Frink, op. cit., 196.

[7]Reynolds, Helen, "Shorthand and Transcription Now and In the 1970's," Business Education Now and In the 1970's, Business Education Association of Metropolitan New York, 1963-1964 Yearbook, p. 119.

Statement of the Problem

This study will attempt to identify certain significant similarities and differences in successful and unsuccessful college level beginning shorthand students and successful and unsuccessful college level transcription students.[8]

The subjects of this study will be analyzed in terms of:

1. certain psychological characteristics
2. clerical speed and comprehension
3. critical thinking
4. spelling ability
5. study habits and attitudes
6. number of weeks of previous shorthand and typewriting instruction
7. place of previous shorthand training
8. college major
9. college grade-point average
10. year in college
11. number of hours of office work experience involving the use of a typewriter
12. college English composition grade
13. skill achievement at the two instructional levels

Significance of the Study

The purpose of this study is to identify the similarities and differences that exist between successful and unsuccessful college

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[8]While certain variables were administered in both the beginning shorthand classes and the transcription classes, other variables were obtained at one instructional level but not the other. These variables are summarized by instructional level on pages

level beginning shorthand students and successful and unsuccessful college level transcription students.

Knowledge of the differences or similarities that exist between these two achievement groups should provide data helpful in providing information that may result in more enlightened course and occupational planning.

Arnstein reports that:

> Secretaries and typists increased by 70 percent in the 1950's alone--more than three times as fast as all other employees. Furthermore, the first annual Manpower Report of the President indicated that shortage of stenographers and other well-trained office workers with typing skills will persist for some time.[9]

With an increasing emphasis on academic subjects and the critical demand for well-trained secretary-stenographers, it is crucial that business educators search for more efficient methods of guiding students in the selection of appropriate vocational programs.

A secondary purpose of this investigation is to provide data that may be useful in identifying prognostic factors.

In terms of enrollment, shorthand continues to remain among the top three business subjects offered in high school and collegiate departments of business education.[10]

Research indicates, however, that the achievement of students completing stenographic programs is low. Of the students completing one-year high school programs, approximately 11 to 20 percent were

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[9]Arnstein, George E., "The Impact of Automation on Occupational Patterns," Recent and Projected Developments Affecting Business Education, National Business Education Yearbook, 1964, p. 46.

[10]Tonne, Herbert A., Popham, Estelle L., Freeman, M. Herbert, Methods of Teaching Business Subjects (New York: Gregg Division, McGraw-Hill Book Company, 1965), p. 3.

reported capable of producing vocationally acceptable transcripts; of the students completing two-year high school stenographic programs, less than 50 percent were reported capable of producing vocationally acceptable transcripts dictated at 80 words a minute. Moreover, less than 50 percent of the high school students and 65 percent of the college students taking the National Business Entrance Tests in 1953 were able to produce mailable transcripts from material dictated at 80 words a minute.[11]

This investigation will compare the similarities and differences that may exist between successful and unsuccessful students in the selected variables at two levels of college shorthand instruction.[12]

While certain of these variables have been examined in previous research studies, inconclusive or contradictory evidence indicates the need for a re-examination of them. The majority of the variables under investigation, however, have not been analyzed in any known study relating shorthand success or failure to these variables. Moreover,

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[11]Frink, op. cit., 198.

[12]The variables employed in this study at both instructional levels included: college major, year in college, number of weeks of previous shorthand instruction, number and name checking, study habits and attitudes, spelling ability, critical thinking, dominance, capacity for status, sociability, social presence, self-acceptance, sense of well-being, responsibility, socialization, self-control, tolerance, good impression, communality, achievement via conformance, achievement via independence, intellectual efficiency, psychological-mindedness, flexibility, femininity, grade-point average, college English composition grade.

The variables employed at the beginning shorthand instructional level included: shorthand brief form test, shorthand theory test, shorthand reading test.

The variables employed at the transcription instructional level included: number of hours of office work experience involving the use of a typewriter, place of previous shorthand courses, typing speed and accuracy, number of weeks of previous typewriting instruction, and transcription ability.

the method of statistical analysis is one that has not been used in any known study relating shorthand achievement to these variables.

Why some students succeed and others fail is a complex problem. Turse believes that:

> If the differences noted among individuals can be related to differences in test scores, then we shall have instruments which may make valuable contributions toward fulfillment of the guidance ideal of individual job adjustment and satisfaction.[13]

Hypotheses

The research hypotheses tested in this study will be:

1. There is a difference between successful and unsuccessful college level beginning shorthand students, as measured by the variables employed in this study.

2. There is a difference between successful and unsuccessful college level transcription students as measured by the variables employed in this study.

Scope of the Study

Seven public-supported Michigan institutions offering secretarial or business education programs participated in this study. These included: three junior colleges, one four-year college, three universities.

The subjects of this study are those students enrolled in nine beginning shorthand classes and nine transcription classes enrolling a total of 431 students during the winter and spring terms, 1967.

Delimitations

1. This study will be limited to girls enrolled in the beginning shorthand classes and transcription classes at the seven participating

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[13]Turse, Paul L., "Prognostic Studies in Business Education," National Business Education Quarterly, XXXV (Winter, 1966-1967), 53.

Michigan two-year and four-year colleges and universities.[14]

2. This study is confined to students who received a grade of A, B, D or E according to the standards established by the participating departments of business education or those of individual instructors.

3. This study will include only subjects enrolled in the selected classes during the winter and spring terms of the 1967 academic year.

4. This study will not attempt to predict vocational success or failure.

5. This study is concerned only with the variables specifically selected, although it is recognized that many factors may be instrumental in success in any course.

Assumptions

The following assumptions are made related to this investigation:

1. That success in beginning shorthand and transcription is based on a number of identifiable variables.

2. That subjects will respond honestly to all standardized and classroom tests to the best of their ability and perception.

3. That subjects will honestly report all information requested related to work experience and prior skill training to the best of their ability and perception.

4. That students participating in this study will have approximately the same kind and quality of teaching.

5. That participating instructors will administer the classroom skill tests according to the directions given.

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[14]Because of the limited number of male students enrolled in classes, this investigation is concerned only with the female subjects selected from the seven participating Michigan institutions.

6. That participating instructors will assign class grades on the basis of earned achievement.

Definition of Terms

1. Beginning Shorthand. The first course in Gregg Shorthand, Diamond Jubilee or Simplified Editions.

2. Transcription. The third semester or equivalent of Gregg Shorthand in which typing, shorthand, English, and other skills are integrated in producing usable copy in a reasonable period of time.

3. College Level. These include two-year junior or community colleges, four-year colleges, universities.

4. Successful Students. Students who receive a grade of A or B according to the standards of the participating institutions or the standards of individual instructors.

5. Unsuccessful Students. Students who receive a grade of D or E according to the standards of the participating schools or the standards of individual instructors.

Organization of the Study

The organization of the study is as follows:

Chapter II -- A review of the literature concerning the problem under investigation.

Chapter III -- The development and use of the instruments employed in gathering the data, the methodology employed in collecting and analyzing the data, and the statistical techniques employed.

Chapter IV -- An analysis of the successful and unsuccessful college level beginning shorthand students.

Chapter V -- An analysis of the successful and unsuccessful college level transcription students.

Chapter VI -- An analysis of the similarities and differences of the successful and unsuccessful college level beginning shorthand and transcription students.

Chapter VII -- A summary of the study, findings, and recommendations.

CHAPTER II

RELATED LITERATURE

Seeking a solution to the high failure and dropout problem among shorthand students, many investigators have attempted to develop instruments and identify characteristics useful in predicting shorthand success.

Although the present investigation is not primarily a prognostic study, it is concerned with the differences that may exist between the high and low achievers at two levels of shorthand instruction; thus, a review of the shorthand prognostic literature is important.

Because of the large number of prognostic studies conducted by business education researchers, only those studies generally significant to the total prognostic literature or those particularly related to the present investigation will be reviewed in this chapter; other related studies will be included in the bibliography. Because of the dearth of related studies conducted on the college level, a number of studies conducted on the high school level will be cited. However, course goals and objectives as well as instructional methods of high school and college shorthand classes are generally similar.

Because of the varied criteria used to measure shorthand success or failure, the varied instruments employed and the reliability of these instruments, the varied sample sizes and instructional levels, the varied methods of conducting investigations and reporting findings,

comparing one study with another is difficult and perhaps misleading. Moreover, categorizing a particular study into a specific group or type may also be misleading. Although direct comparisons cannot necessarily be made, this review of literature is divided into six major sections:

1. Studies dealing with multiple research factors
2. Studies comparing shorthand dropouts with non-dropouts
3. Studies examining the relationship between published shorthand aptitude tests and shorthand achievement
4. Studies comparing grades in various courses and shorthand achievement
5. Studies examining the relationship between skill achievement and shorthand success
6. Studies dealing with other factors (e. g., listening ability)

Multiple Factors

Most prognostic studies conducted over approximately the past forty-five years have investigated a number of factors that might prove useful in predicting shorthand success. Bills[1] was perhaps the first investigator to recommend that a battery of tests be used to predict shorthand success rather than relying on a single test or prognosticating factor. Many business education researchers have concurred with Bills' 1921 recommendation.

Eyster[2] conducted one of the most extensive early predictive studies based on multiple factors, an investigation that served as a

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[1]Bills, M. A., "A Test for Use in the Selection of Stenographers," Journal of Applied Psychology, V (September, 1921), 275-83.

[2]Eyster, Elvin S., "Prognosis of Scholastic Success in Shorthand," The National Business Education Quarterly, XVII (December, 1938), 31-34.

prototype for subsequent investigators. His findings, reported in 1938, were substantiated by other researchers.[3, 4, 5, 6, 7]

Eyster compared five predictive factors and shorthand achievement: 1) mental ability; 2) average English grades; 3) average of all high school grades exclusive of English; 4) scores on a stenographic prognostic test; and 5) subjective trait ratings (work habits, personality, and character traits).

A total of 617 high school pupils were divided into three groups: those predicted to succeed in shorthand; those predicted to have a 50-50 chance of succeeding; and those with little chance of succeeding. Classroom teachers were not aware of the category of any particular student.

Of the 370 pupils predicted to succeed, 2.4 percent failed; of the 109 pupils predicted to fail, 100 percent failed; of the 138 pupils predicted as having an even chance of succeeding or failing, 49.2 percent failed.

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[3]Kortendic, M. L., "A Study of Prognosis in Shorthand," Summaries of Studies and Research in Business Education, Delta Pi Epsilon Publication, 1962.

[4]Missling, Lorraine, "Prognostic Testing in Shorthand" (unpublished Master's thesis, University of Wisconsin, 1954).

[5]Strickland, Esther H., "Criteria for Predicting Success in Shorthand at East High School, Columbus, Ohio" (unpublished Master's thesis, The Ohio State University, 1957).

[6]Stroop, Christine, "Research Conclusions for Teaching Stenography," Journal of Business Education, XXIX (October, 1953), 15-16.

[7]Worley, Raymond J., "Relative Value of the I. Q. and Marks for Predicting Success in Shorthand" (unpublished Master's thesis, Harvard University, 1931).

Although Eyster's reported prognosis was highly accurate for all three groups, he concluded that the factors selected for investigation were actually indices of general scholastic ability rather than indices of shorthand aptitude. He reported that the prognosis seemed to apply to other school subjects with similar accuracy.

Another major study of shorthand achievement was conducted by Osborne[8] in 1943. This multiple factor study also served as a model for a number of studies that correlated certain factors with a certain criterion of success.

Osborne administered a battery of selected psychological tests to 139 second-semester high school students attending four different high schools. She based success on a standardized shorthand achievement test, the Carmichael Shorthand Learning Test, a test consisting of shorthand dictation, brief forms and phrases, reading and transcription. Other tests utilized included: the Otis Self-Administering Test of Mental Ability, the Iowa Silent Reading Test, the Institution of Educational Research Clerical Ability Test, the Revised Minnesota Paper Form Board Test, and the Gates Visual Perception Test.

Correlations were computed for the thirty variables obtained from the five standardized tests with the achievement criterion and with one another. Osborne reported that not one of the correlations was high enough for predictive value. Although the correlation obtained between the shorthand criterion and mental ability (.3765) revealed that a degree of relation existed, Osborne cautioned that high mental ability does not necessarily result in superior shorthand achievement nor low

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[8]Osborne, Agnes E., "The Relationship Between Certain Psychological Tests and Shorthand Achievement" (published Ph. D. dissertation, Columbia University, 1943).

mental ability preclude high performance. She, too, believed that no single factor would be adequate for predicting shorthand success.

Subsequent investigations conducted at both the high school and college level with varied sample sizes, examining many of the factors studied by Osborne also reported low correlations.[9, 10, 11, 12, 13]

Doubleday's[14] study also included multiple factors. His investigation included a study of: silent reading abilities on printed and longhand material, mental ability, rapidity of motor response, purpose for taking shorthand, personal reaction to shorthand, vocational interest, amount of time and interest given to school activities, and a composite of teachers' grades and shorthand grades.

While he found no significant correlations in the factors studied, Doubleday also concluded that, while a student of high or average mental ability has a better chance for success in shorthand than the student of low intelligence, the difference is not great enough to predict

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[9]Cruzan, Fairah, "Predicting Shorthand Ability by Prognostic Testing" (unpublished Master's thesis, Oklahoma Agricultural and Mechanical College, 1942).

[10]Henrickson, Rosanne C., "The Differential Aptitude Tests for Verbal Reasoning, Numerical Ability, Abstract Reasoning, Space Relations, Mechanical Reasoning, and Clerical Speed and Accuracy as Predictors of Success in Shorthand" (unpublished Master's thesis, University of Minnesota, 1963).

[11]Takasugi, Dorothy, "The Relationship Between Certain Psychological Tests and Other Selected Factors with Shorthand Achievement" (unpublished Master's thesis, University of Southern California, 1961).

[12]Whittle, Marie, "The Relationship Between Certain Variables and Achievement in Beginning Shorthand at the University of Texas" (unpublished Master's thesis, University of Texas, 1959).

[13]Worley, op. cit.

[14]Doubleday, Lewis, "A Study of the Factors Affecting Achievement in Shorthand" (unpublished Master's thesis, State University of Iowa, 1939).

success in individual cases or that students of less than average mental ability will not succeed.

Doubleday, and other investigators,[15, 16, 17, 18] further concluded that the relationship between a composite of student grades and shorthand success is sufficiently high to warrant using them for predicting success in shorthand.[19]

Studies conducted by Sherman[20] and Hutson,[21] however, were not as optimistic concerning teachers' grades as an accurate predictor of shorthand success or failure. Both investigators cautioned against using these marks as a sole selection factor. Neither study obtained significantly high relations between the other factors studied in addition to teachers' grades (reading comprehension and rate, penmanship speed and quality, English, spelling, typewriting achievement, motor action, mental ability, grade-point average, stenographic aptitude, vocabulary, interest, age).

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[15]Jones, Lena, "Prognosis of Shorthand Achievement at the University Level" (unpublished Master's thesis, University of Tennessee, 1951).

[16]Lynch, Aline, "Factors Related to the Achievement of the One Hundred-four High School Seniors in a First Course of Shorthand" (unpublished Master's thesis, University of Michigan, 1947).

[17]Missling, op. cit.

[18]Whittle, op. cit.

[19]See also, Maedke, Wilmer O., "The Relative Prognosis Value of Selected Criteria in the Prediction of Stenographic Success or Failure in Selected Secondary Schools in Illinois" (unpublished Ph. D. dissertation, Northwestern University, 1957).

[20]Sherman, Marsden A., "A Study of Prognosis in Shorthand," Business Education World, XXII (April, 1942), 696-97.

[21]Hutson, Billy, "Prognosis of Achievement in First-Year Gregg Shorthand Simplified" (unpublished Master's thesis, University of Tennessee, 1951).

Other studies concerning student grades will be discussed in a separate section.

Spelling ability, a concern of this investigation, was also studied by a number of investigators,[22, 23, 24, 25] all of whom found slight or no correlations between spelling achievement and shorthand success, according to a variety of achievement criteria. No investigation, however, compared the spelling achievement of high and low shorthand achievers.

Hale[26] conducted a factor analysis to identify factors that enter into the shorthand-transcription process. Five independent, uncorrelated factors were studied: verbal, perceptual, manual dexterity, abstract thinking, and personal. Seventy-eight high school transcription students were given standardized tests measuring reading ability, vocabulary, word sense, spelling, manual dexterity, name and number comparison, spatial visualization, abstract thinking, symbol manipulation, perseverance, speed of writing, memory, phonetics, typewriting speed and accuracy, study habits. The New York State Regents transcription and typewriting examination was administered as the research criterion.

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[22]Strickland, op. cit.

[23]Cheney, Truman, and Goodish, Naomi, "Analysis Between Certain Variables and Achievement in Beginning Shorthand," Journal of Business Education, XXXVIII (May, 1963), 317-19.

[24]Ryan, Christopher M., "Prognosis of First-Term Pitman Shorthand: The Relationship Between Certain Characteristics of the Vocational High School Pupils and the Achievement in First-Term Shorthand" (unpublished Ed. D. dissertation, New York University, 1953).

[25]Hutson, op. cit.

[26]Hale, Jordan, "A Factor Analysis of Shorthand-Transcription Ability" (unpublished Ph. D. dissertation, New York University, 1958).

Hale identified three significant factors through his factor analysis:

1. Psychomotor speed, consisting of perceptual and manual speed and ability to work quickly under stress without breaking down.

2. Verbal, consisting of the ability to manipulate or to work with words and meanings.

3. Non-verbal with a spatial visualization-mechanical ability component.

Hale reported that 54 percent of the total variance of the Minnesota Clerical Number Comparison Test could be attributed to the psychomotor speed factor; that 84 percent of the total variance of the Turse Word Discrimination sub-test could be attributed to the verbal factor; and that 44 percent of the total variance of the Turse Symbol Transcription sub-test could be attributed to the nonverbal factor.

Krueger's[27] study of 31 beginning shorthand students found a correlation coefficient of .61 for name checking and .64 for number checking on the Minnesota Clerical Test and his criterion for success. Other studies using the Minnesota Clerical Test found only slight or no relation between the test and the particular shorthand criterion.[28, 29]

The present investigation will also analyze the separate scores of the Minnesota Clerical Test in order to study the relationship that may exist between the successful and unsuccessful beginning shorthand students and the successful and unsuccessful transcription students.

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[27]Krueger, Donald D., "Prediction of Success in Business Subjects with Use of Minnesota Clerical Test" (unpublished Master's thesis, University of Wisconsin, 1963).

[28]Green, Charles C., "The Use of Clerical, Intelligence and Other Tests for Guidance Purposes in Shorthand I, Typewriting I, and Office Machines" (unpublished Master's thesis, Kansas State College, 1951).

[29]Cruzan, op. cit.

A study related to the present investigation was conducted by Evans[30] who evaluated certain factors relating to college shorthand achievement.

Evans studied the high school and college records of 335 female subjects who completed one year of shorthand and received a grade of A, B, D or E. He reported that:

1. High school rank appeared to have a definite relation to achievement in shorthand at college.[31, 32]

2. The amount of high school shorthand did not have an effect on college shorthand performance.

3. High school typewriting in excess of one year appeared to have no predictive value for college shorthand achievement.

4. Success in college shorthand seemed related to high school English grades.

5. Performance on the American Council on Education Psychological Examination was related to shorthand success or failure in college.[33, 34]

6. Seventy percent of the successful students received high grades in college English; however, twenty-two percent of the unsuccessful students also received high grades in college English.

7. Sixty-eight percent of the successful students received high scores on a standardized English placement test; however, twenty-eight percent of those who received high scores on this test also failed shorthand.

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[30]Evans, Ernestine, "Factors Related to Varied Achievement in Shorthand on the College Level" (unpublished Master's thesis, State College of Washington, 1941).

[31]See also, Whittle, op. cit. and

[32]Maedke, op. cit.

[33]See also, Danielson, Harriet Ann, "The Relationship Between Competency in Shorthand Vocabulary and Achievement in Shorthand Dictation" (unpublished Ed. D. dissertation, Indiana University, 1959), and

[34]Lang, Mary Jane, "The Relationship Between Certain Psychological Tests and Shorthand Achievement at Three Instruction Levels" (unpublished Ed. D. dissertation, University of Missouri, 1960).

In summary, while most multiple factor investigations attempted to identify a single or several factors predictive of shorthand success, the general conclusion was that a combination of factors should be used for prognostic or selection purposes. These factors included: mental ability, English composition grades, overall grade-point average, and personal trait ratings.

It was generally agreed that achievement in shorthand was not dependent on a single characteristic or trait but upon a variety of factors.

The conclusions of many multiple factor prognostic studies were based on small samples or percentages with little attempt to measure the significance of any identified differences through statistical tests.

The present investigation is also concerned with a number of factors. The emphasis, however, is one of identifying a characteristic or a combination of characteristics that may differentiate the successful shorthand student from the unsuccessful shorthand student so that more meaningful guidance and vocational planning may take place.

Shorthand Aptitude Tests

Many researchers studied the relation between the various published shorthand aptitude tests and shorthand achievement. In general, however, the findings yielded low or contradictory results.

The Hoke Prognostic Test of Stenographic Ability, one of the oldest shorthand aptitude tests, has proved ineffective as a single predictor of shorthand learning success. A comprehensive study by Blanchard[35] conducted in 51 high schools and colleges in 26 states

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[35]Blanchard, Clyde I., "Results of a Study of the Validity of

found no correlation between the test and shorthand achievement. Earlier and subsequent studies by a number of investigators corroborated Blanchard's findings.[36, 37, 38, 39]

One factor of Maedke's study of 490 first- and second-year high school students was the relationship between the Turse Shorthand Aptitude Test and shorthand achievement.[40] He reported a correlation of .45 between the Turse Test and the achievement of the first-year students and a correlation of .58 between the test and second-year students.

Agreeing with Maedke, Jack[41] studied the correlation between the Turse Test and the achievement of first- and second-year shorthand students. He reported a higher degree of correlation existed between the test and second-year students, .51, than the first-year students, .32. Jack also reported a higher degree of correlation existed between the intelligence scores of the second-year students and the score received on the Turse, .60. A correlation of .41 was obtained for intelligence scores and the Turse test for the first-year shorthand students.[42]

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the Hoke Prognostic Tests of Stenographic Ability," The American Shorthand Teacher, X (January, 1930), 196.

[36]Jessup, E., "Application of Prognostic and Achievement Tests in Shorthand," Journal of Commerical Education, LVII (June, 1928), 173-74.

[37]Kessinger, E., "A Prognostic Study in High School Shorthand" (unpublished Master's thesis, Louisiana State University, 1936).

[38]Wood, Ethel H., "Correlation of Prognostic Test and Will-Temperament Tests with Actual Results in Gregg Shorthand" (unpublished Master's thesis, Washington State College, 1928).

[39]Terrill, Chester J., "The Value of the Hoke Prognostic Test of Stenographic Ability as a Means of Selecting Shorthand Students" (unpublished Master's thesis, New York State College for Teachers, 1927).

[40]Maedke, op. cit.

[41]Jack, Melvin C., "Can We Predict Success in Shorthand?" The Balance Sheet, XXXIII (January, 1952), 212-19.

Other investigators, working with smaller samples, reported lower correlations between the Turse Test and their specific criteria for classroom achievement.[43, 44, 45, 46]

Hosler[47] studied the relation between 75 beginning college shorthand students on two different shorthand aptitude tests, the Turse and the Educational Research Corporation Shorthand Aptitude Test (ERC). He reported a correlation of .79 between the two tests and found that both gave almost identical results when correlated with intelligence scores (.64 Turse; .65 ERC). Hosler also reported that the relationship between scores made on a five-minute dictation test and the tests were almost identical (.65 Turse; .63 ERC). He concluded that neither test should be used as the determining factor in predicting shorthand success.

Takasugi[48] compared the relation between high school shorthand grades and the scores obtained on the Turse Test (.53) and the Byers' First-Year Shorthand Aptitude Test (.60). She found that the Byers' test was slightly superior to the Turse but also concluded that neither should be used as a single prognosticating device.

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[42]See also, Dibona, Lucille J., "Predicting Success in Shorthand," Journal of Business Education, XXXV (February, 1960), 213-14.

[43]Davis, Alexandria M., "Criteria for the Selection of Students of Shorthand" (unpublished Master's thesis, University of Minnesota, 1944).

[44]Didson, Mary H., "A Study in Typewriting and Shorthand Prognosis" (unpublished Master's thesis, University of Kentucky, 1943).

[45]Cruzan, op. cit.

[46]Edmunds, B. R., "A Study of Shorthand Prognosis at Jordan Senior High School, Long Beach, California" (unpublished Master's thesis, The University of Southern California, 1957).

[47]Hosler, Russell J., "Aptitude Testing in Shorthand," Journal of Business Education, XXII (May, 1947), 25.

[48]Takasugi, op. cit.

The staff members of the Chicago Bureau of Business Education and the Bureau of Child Study administered the Turse Test and the ERC Test to 309 high school beginning and advanced shorthand students to determine the most satisfactory instrument for predicting shorthand success.[49] The results of these tests were correlated with classroom achievement tests. The Turse yielded a correlation of .52 while the ERC yielded a correlation of .47. Neither, however, were considered sufficiently high to be used as the sole instrument in predicting success in shorthand. In summary, while there was definite agreement that the Hoke Test was not useful as a single predictor for shorthand success, there was certain disagreement concerning the value of the other published shorthand aptitude tests. It was generally concluded, however, that the published shorthand aptitude tests should not be used as a single predictor of shorthand success or failure.

Skill Achievement

The relationship between shorthand skill achievement and classroom success has been studied by a number of researchers seeking to identify factors useful in improving shorthand instruction.

Haggblade[50] administered a series of five letters of equal length, syllabic intensity, syllables, and sentences at 80 words a minute to 232 fourth-semester high school shorthand students. She correlated shorthand achievement with the ability to write theoretically correct shorthand outlines, shorthand and typewriting speed, transcription speed and accuracy, and typewriting accuracy.

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[49] DiBona, op. cit.

[50] Haggblade, Berle, "Factors Affecting Achievement in Shorthand" (unpublished Ed. D. dissertation, University of California, 1965).

The variables making the greatest contribution to shorthand success, when correlated with Haggblade's criterion, were the ability to write theoretically correct shorthand outlines for the high frequency words (.76923) and transcription speed (.76842).

Factors producing the lowest correlations were the ability to write theoretically correct brief forms (.23396) and typewriting accuracy (.23644).

An earlier investigation by Danielson[51] studied the relationship between shorthand vocabulary competency and shorthand dictation achievement of 120 college transcription students. The influence of general scholastic ability on each of these two factors was also studied.

Shorthand vocabulary achievement was measured by six tests, each consisting of 250 words, taken from Silverthorn's "High Frequency Business Vocabulary Word List."

Danielson reported that shorthand vocabulary theory competency was significantly related to dictation achievement (a correlation of .49). She cautioned, however, that though vocabulary is a prime requisite in attaining dictation ability, it was not the sole factor.

Danielson reported that general scholastic ability, as measured by an intelligence test and overall grade-point average, was found to be only remotely related to ability in shorthand vocabulary. Practically no relationship was found between the scores on the English section of a general ability test and shorthand vocabulary competency. She reported a correlation of .46 between dictation achievement and general scholastic ability. Danielson further reported that students having low-level general scholastic ability were unable to attain

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[51]Danielson, op. cit.

average-or-above shorthand dictation rates while students who attained high-level dictation rates were of high-level scholastic ability.

Danielson believed that the lack of influence of general scholastic ability on competency in shorthand vocabulary leads to the defensible conclusion that mastery of shorthand vocabulary requires abilities and capacities different from those required for mastery of academic subjects such as literature, history, and science.

Pullis[52] also found a significant relation between shorthand theory accuracy and shorthand dictation achievement of college students enrolled in the first, second, third, and fourth semesters of shorthand. He reported a correlation of .8326 between shorthand vocabulary accuracy and dictation achievement. Pullis did not find a significant relation between intelligence and shorthand accuracy (.1327) nor intelligence and dictation achievement (.0694).

Studies by Fermenich[53] and Lusk[54] used high school students as subjects. Fermenich also found a significant relation between accuracy in shorthand theory and accuracy in transcription; Lusk reported that successful students, according to his research criterion, wrote approximately 70 percent of the shorthand outlines correctly while unsuccessful students wrote approximately 50 percent of the outlines correctly. In summary, there was general agreement among researchers that a relation

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[52]Pullis, Joe M., "Relation Between Accuracy and Achievement in Shorthand" (unpublished Ed. D. dissertation, North Texas State University, 1966).

[53]Fermenich, William F., "An Analysis of the Relationship Between Application of Some Principles of Gregg Shorthand Simplified and Errors in Transcription" (unpublished Master's thesis, Mankato State College, 1959).

[54]Lusk, Norman M., "A Study of the Comparison Between Construction of Shorthand Outlines According to Theory and Accuracy of Transcript" (unpublished Master's thesis, University of Washington, 1959).

existed between shorthand vocabulary competency and dictation achievement at all levels of shorthand instruction. Because of the varied methods of determining vocabulary competency, however, and methods of relating this competency to a reliable criterion of dictation and transcription success, certain research conclusions must be viewed with caution.

The present investigation will measure the relationship between successful and unsuccessful beginning shorthand and transcription students on certain classroom achievement tests.

Shorthand Dropouts

A number of researchers compared students who fail or drop shorthand with those who remain in the course--seeking to identify factors that might distinguish one group from another.

Meyer[55] examined 41 different characteristics possessed by 107 shorthand dropouts and 106 non-dropouts in first-year high school shorthand programs. Data were gathered from school records, the students themselves, and teachers' ratings. The reasons for dropping shorthand were associated with a lack of success in the course.

Meyer concluded that while shorthand dropouts do differ from non-dropouts, they are alike to such a degree that selecting shorthand students on the basis of these differences is not justified. She reported the factors that distinguished dropouts from non-dropouts included:

1. The dropout ranked lower academically than the non-dropout, usually coming from the lower two-fifths of his class.

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[55]Meyer, Bernadine, "A Study of Selected Factors Possessed by Shorthand Dropouts and Non-Dropouts in Eleven Western Pennsylvania High Schools" (unpublished Ed. D. dissertation, Teachers College, Columbia University, 1956).

2. The dropout received lower grades in English and business courses other than shorthand.

3. The dropout's reading ability was poorer than the non-dropout.

4. Shorthand teachers subjectively rated the dropout low in such traits and skills as: ability to understand and follow directions; interest in shorthand and school; enthusiasm for school work; good study habits; reliability; dependability; initiative; self-confidence; emotional stability; care and thought in work; neatness and speed of work; punctuality in handling assignments; English skills; honesty; and emotional stability.

5. The dropout was absent from school more frequently.[56]

6. The dropout was less interested in office work than the non-dropout.

Meyer reported that the dropout and the non-dropout were alike in the following characteristics:

1. They did not differ significantly on the scores made in the Differential Aptitude Test.[57]

2. They were not considered different in the ratings given them by their current teachers in cooperativeness with and acceptancy by classmates.

3. The occupations and educational backgrounds of their parents were not different.

4. The dropout's overall general attitude toward school was not significantly different than that expressed by the non-dropout.

5. Both groups enrolled in shorthand for the same reasons--they thought they wanted to be stenographers and wanted to prepare for earning a living.

6. Before enrolling in shorthand, both groups believed that shorthand would be hard--though interesting.

Breuch[58] analyzed the responses of 143 students who dropped first-

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[56]See also, Lee, Mary Elizabeth, "A Prognostic Study in Shorthand" (unpublished Master's thesis, The University of Southern California, 1958).

[57]See also, Hendrickson, op. cit.

[58]Breuch, Margaret E., "An Analysis of the Drop-Outs in First Year Shorthand Classes" (unpublished Master's thesis, Colorado State College

year shorthand and the opinions of their shorthand teachers. She reported the following according to percentages and frequencies of response:

1. Of the reasons given as to why pupils enrolled in shorthand, the deferred vocational objective was given most frequently, a total of 66 times; the personal use objective, a total of 29 times; parental influence and interest in a mysterious subject, each 24 times; and the immediate vocational objective, 22 times.

2. Reasons given for dropping shorthand were: miscellaneous reasons such as needed at home, marriage, transfer to another school, moving and ill health, 38 times; the difficulty of shorthand, 33 times; no need for shorthand, 25 times; too much home work, 16 times; and failing, 12 times.

3. Analysis of the causes of dropping shorthand, according to teacher opinion, showed failure to be listed most frequently, 25 percent; difficulty of the subject, 15 percent; no need for shorthand and miscellaneous causes, each 13 percent; and work, 8 percent.

4. Intelligence scores and grades in high school seemed to have little relation to the number of students who drop shorthand.

Spangler[59] also reported that no single factor could be identified as an exclusive factor causing students to withdraw from shorthand. His findings gleaned from the high school records of 43 shorthand dropouts were based on frequencies and subjective evaluation:

1. Above-average intelligence does not assure shorthand success; likewise, below average intelligence does not always result in failure.

2. Pupils who do below-average work in typing generally do not continue with advanced shorthand. On the other hand, average grades or above in typewriting does not assure success.

3. Excessive absence is a factor contributing to dropping shorthand.

4. The vocational objective may be a contributing factor to

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[59]Spangler, Allen C., "Cause for Drop-Outs in First-Year Shorthand in Newark, Ohio High School" (unpublished Master's thesis, The Ohio State University, 1940).

success or failure since only 12 students who dropped shorthand desired stenographic work as compared with 40 who desired jobs for which shorthand was not necessary.

5. Pupils with average or above-average English grades have a greater probability for success in shorthand than those with below-average English grades.

6. Inadequacies in the guidance program is a major factor in the high dropout rate since only 32 out of the 63 students stated that they were interested in learning shorthand.

Concerned that enrollments in advanced shorthand were only a third of those in first-year shorthand, the Business Education Bureau of Virginia[60] surveyed students and teachers in 137 different high schools. Of the 4,754 students enrolled in first-year shorthand, only 1,552 enrolled for second-year shorthand. Survey forms for 880 pupils were evaluated and the major causes of dropping and failing shorthand, as implied by the students according to frequency of response, included:

1. Lack of patience and understanding on the part of the shorthand teacher.

2. Lack of knowledge of the usefulness and importance of shorthand.

3. A feel that the shorthand class was paced too fast for the student to grasp.

4. Monotony.

Students who passed first-year shorthand but did not take advanced training reported that they feared failing second-year shorthand or that taking shorthand dictation made them nervous.

In summary, while research does show that shorthand dropouts differ from non-dropouts in certain characteristics, research also shows that these students are sufficiently alike to make selection

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[60]Virginia Business Education Bulletin, "Implications of a Survey of Shorthand Drop-outs and Failures," Journal of Business Education, XXXII (February, 1957), 215-17.

unjustified on the basis of these differences. Many of these investigations were based on opinion and subjective evaluation--on the part of the students, the teachers, and the investigators. Statistically significant differences were generally not reported.

Student Grades

The relationship between student grades and shorthand success has been considered by many researchers.

Spellman[61] correlated the grades received in advanced shorthand by 200 college students and the grades received in accounting (.384); economics (.180); English (.346); foreign languages (.458); geography (.146); mathematics (.250); science (.309); and typewriting (.393). He found that these grades had little, if any, value in predicting shorthand grades and concluded that the low correlations indicated that a multiplicity of factors tend to affect shorthand achievement.

Maedke[62] studied the relationship that existed between certain subject grades and a five-minute transcription test of 490 beginning high school shorthand students. He reported the following correlations: English, .54; typewriting, .48; foreign languages, .57; general business, .46; and bookkeeping, .57. Maedke reported that the grade-point average was a significant factor in predicting the success or failure of prospective shorthand students at the high school level.

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[61]Spellman, Leola B., "A Statistical Analysis of Shorthand Grades as Related to Grades in Academic Subjects on the College Level" (unpublished Master's thesis, Oklahoma Agricultural and Mechanical College, 1945).

[62]Maedke, op. cit.

Wilson[63] correlated shorthand grades and intelligence along with typing and English grades; he concluded that grades in beginning typing and English along with an intelligence score are, in that order, the best indicators of shorthand success. His findings were supported by other investigators.[64]

Heil[65] studied the records of 225 high school graduates who completed stenographic training and grades in English, Typing I, Bookkeeping I and II, and Spanish I and II; intelligence was also considered. She reported that, while there was little relation between intelligence and grades received in shorthand, no pupil whose I. Q. was less than 90 made an A in shorthand. Correlations between English and shorthand grades were higher than those between intelligence and shorthand grades but not high enough to use as a single prognosticating factor.

Although grades in typewriting and shorthand had too low a correlation (.24 and .40 respectively) for prediction purposes, grades in first-semester bookkeeping had a higher positive relation than intelligence or grades received in English or beginning typewriting. But, as Heil pointed out, since 60 percent of the students who failed first-semester bookkeeping received a grade of C in shorthand, failure in bookkeeping could not be used as the basis for predicting failure in shorthand.

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[63]Wilson, W. Harmon, "Who Should Take Shorthand?" The Balance Sheet, XXXI (March, 1950), 310-12.

[64]See also, Gallagher, Ralph P., Albert, Elizabeth, and St[illegible], Barbara, "Advisory Criteria for Selecting Pupils for Shorthand," Business Education Forum, IV (May, 1950), 25, 30.

[65]Heil, Margaret E., "The Value of the Teachers' Marks in Certain High School Subjects for Predicting Teachers' Marks in Stenography" (unpublished Master's thesis, University of Louisville, 1936).

Heil reported a correlation coefficient of .69 between grades in first-semester Spanish and first-semester shorthand. The correlation between Spanish I and Stenography III, however, dropped to .46. Heil concluded, therefore, that successful performance at advanced levels of shorthand depend more on knowledge and skill gained in the two preceding semesters of shorthand than on learning factors common to shorthand and Spanish.

Heil's findings agreed with a number of studies that concluded that English marks, scholastic achievement, and foreign language grades were the best measures available for guidance purposes.[66, 67, 68, 69, 70, 71, 72, 73, 74]

An additional conclusion reached by Heil, based on her study of high school students, was supported by Dempsey,[75] who based her findings on college students: the best measure for predicting success in advanced shorthand is by the grade earned in prerequisite shorthand

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[66]Beam, Verna Frances, "Vocational Guidance of Pupils in the Stenographic Curriculum in Senior High Schools" (unpublished Master's thesis, The University of Southern California, 1933).

[67]Cheney and Goodish, op. cit.

[68]Duncan, Margaret E., "Prognostic Testing in Shorthand," Journal of Business Education, XII (April, 1936), 15-16.

[69]Maedka, op. cit. [70]Edmunds, op. cit.

[71]Jones, op. cit. [72]Lynch, op. cit.

[73]Ohmann, O. A., "The Possibilities of Prognosis in Stenography," Research Studies in Commercial Education, Monographs in Education Series No. 11 (Iowa City: State University of Iowa, 1926).

[74]Strickland, op. cit.

[75]Dempsey, Audrey V., "A Study to Determine to What Extent Success in Beginning Stenography is Indicative of Success in Advanced Stenography" (unpublished Doctor's field study, Colorado State College, 1950).

courses.[76] Dempsey studied the college records of 200 students who completed a required collegiate shorthand sequence. She found that:

1. Of the 14.5 percent rated "superior" (in grades) at the beginning of their training, 3.5 percent received a "superior" rating (in grades) at the end of their training.

2. Of the 200 subjects who completed the shorthand sequence, only 4 percent were considered "below average" at the end of the first semester of shorthand; 29 percent, however, were considered "below average" at the end of the fourth semester of shorthand.

3. The fact that none of the students who received "superior" ratings in their beginning courses fell below a rating of "average" by the time they reached transcription indicates that a "superior" rating in beginning shorthand may be used as an index of possible achievement in the transcription process.

4. Of the students who were considered average at the beginning of their training, only 5.2 percent were in the failure category in the final course. Of those originally below average, 37.5 were still below average or failing at the end of their training.

Dempsey concluded that, although a beginning student whose achievement is "superior" or "above-average" is almost certain to complete the advanced courses in a satisfactory manner, below average achievement in beginning shorthand does not necessarily preclude success in the advanced courses.

In summary, average grades are generally the best predictor of shorthand success, though certainly not an infallible one. There was general agreement that knowledge of the average English grade is also useful for guidance purposes. Foreign language grades, if they are available, were also considered useful for guidance purposes.

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[76]See also, Varah, Leonard J., "Effect of Academic Motivation and Other Selected Criteria of Achievement of First and Second Semester Shorthand Students" (unpublished Ph. D. dissertation, Michigan State University, 1966).

Grades in typewriting and bookkeeping have yielded significant relationships to success in shorthand in some studies while yielding low correlations in others, probably because of varied course definitions, objectives, methods of instruction, and research design.

Grades in beginning shorthand were an important factor in predicting success in advanced shorthand, though not necessarily a precluding factor.

College English composition class and the overall college grade-point average are factors studied in the present investigation.

Mental Ability

More research has been conducted studying the relationship between intelligence and shorthand achievement than any other factor.

Bills,[77] who conducted one of the earliest multiple prognostic studies, found that intelligence was an effective factor in eliminating shorthand failures. Other investigators concluded that though a relationship between intelligence and shorthand success did exist, it was not high enough to justify the use of an intelligence score as a single prognosticating factor.[78, 79, 80, 81, 82, 83, 84]

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[77]Bills, M. A., "A Test for Use in the Selection of Stenographers," Journal of Applied Psychology, V (May, 1921), 275-83.

[78]Beam, op. cit. [79]DiBona, op. cit. [80]Edmunds, op cit.

[81]Hutson, Billy T., and Vincent, Nicholas M., "Motivation and Prognosis in Shorthand," Journal of Business Education, XXXIII (October, 1957), 31-32.

[82]Osborne, op. cit.

[83]Rankel, William L., "A Comparative Study of the Relationship Between Intelligence and Success in English Composition, Typing, and Shorthand" (unpublished Master's thesis, The University of Southern California, 1943).

Sandy,[85] who reviewed five shorthand studies involving 1,123 cases, found correlations between intelligence and shorthand grades ranging from .22 to .46.

Worley[86] correlated shorthand achievement as measured by teachers' grades and the intelligence scores of 536 high school students and reported that the relationship between intelligence scores and grades received in shorthand was not as high as correlations in other school subjects. The correlations between shorthand grades and the factors studied were: foreign language grades, .759; junior high school English grades, .707; penmanship marks, .557; typewriting marks, .526; science marks, .418; mathematics marks, .408; and intelligence quotient, .398.

In summary, there was agreement that while a relationship between shorthand achievement and intelligence scores did exist, intelligence scores are not adequate predictors of individual success or failure.

Other Factors

Language Aptitude. Studies conducted by Lang[87] and Veon[88] correlated shorthand success with aptitude for foreign languages.

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[84]VanKirk, Virginia, "A Study of the Relationship Between Ability Measures and Success in Beginning and Advanced Shorthand" (unpublished Master's thesis, The University of Southern California, 1960).

[85]Sandy, F. M., "A Critical Examination of Research Dealing with the Intelligence of Secondary School Commercial Students" (unpublished Master's thesis, State University of Iowa, 1932).

[86]Worley, op. cit. [87]Lang, op. cit.

[88]Veon, Dorthy H., The Relationship of Learning Factors Found in Certain Modern Foreign-Language Aptitude Tests to the Prediction of Shorthand Achievement in College, Oklahoma Agricultural and Mechanical College, Stillwater, 1950.

Lang related the achievement of 184 college students at three instructional levels and aptitude for foreign language, vocabulary aptitude, linguistic ability, and general scholastic aptitude. She reported that, though there was a positive relation between foreign language and linguistic aptitude and shorthand achievement, the greatest proportion of the variance found in her study was attributed to factors not measured. The highest coefficient of correlation yielded by a single measure (.60) between the Iowa Placement Examination--Foreign Language Aptitude, Form M and achievement at the elementary shorthand level accounted for only .36 of the total variance.

Veon studied the correlation of certain standardized language aptitude tests and the Carmichael Shorthand Learning Test of 299 college level students. A multiple correlation (.5421) indicated that the combination of the standardized tests was not effective in predicting shorthand success. However, subtests using Esperanto yielded correlations as high as .8363. Veon recommended that additional study of the Esperanto subtests be conducted for possible predictive measures.

Listening and Reading Ability. Duncan[89] administered the Brown-Carlson Listening Comprehension Test to 552 third-semester shorthand high school students to determine the relation of listening ability and shorthand success. Success was determined by three letters constructed by the investigator and dictated at 90, 100, and 110 words a minute. Duncan reported that the relationship between listening ability and shorthand achievement (a .36 correlation) is slight.

Investigations relating reading ability to shorthand achievement,

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[89]Duncan, Charles H., "The Relationship Between Listening Ability and Shorthand Achievement" (unpublished Ed. D. thesis, University of Pittsburgh, 1959).

conducted at both the college and high school levels, also reported slight or no relationships.[90, 91, 92, 93, 94, 95, 96]

Motivation. Duchand,[97] Sherman,[98] Leslie,[99] Whittle,[100] Osborne,[101] and Varah[102] are among a number of business educators who believe that motivation, emotional maturity or study habits are major determinates in shorthand success. Many investigators have subjectively concluded that the "drive-to-succeed" is the instrumental factor in shorthand success.

Apparently this "drive-to-succeed" is composed of factors not related to occupational interest or aptitude as studies relating shorthand achievement to occupational interest or aptitude have found no significant relationships.[103, 104, 105, 106, 107]

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[90]Blacker, Margaret, "The Use of Certain Tests in the Prediction of Success in High School Shorthand" (unpublished Master's thesis, University of Wyoming, 1951).

[91]Duchand, Simon A., "Can We Predict Superior Achievement in Shorthand?" Business Education World, XXXIII (February, 1953), 276-77.

[92]Doubleday, op. cit. [93]Lynch, op. cit.

[94]Ryan, op. cit. [95]Sherman, op. cit.

[96]Maleug, Evelyn and Snyder, Louise M., "Shorthand Success in College," Journal of Business Education, XV (February, 1940), 17-18.

[97]Duchand, op. cit. [98]Sherman, op. cit.

[99]Leslie, Louis, Methods of Teaching Gregg Shorthand (New York: Gregg Division, McGraw-Hill Book Company, Inc., 1953).

[100]Whittle, op. cit. [101]Osborne, op. cit. [102]Varah, op. cit.

[103]Barrett, Dorothy M., "Prediction of Achievement in Typewriting and Stenography in a Liberal Arts College," Journal of Applied Psychology, XXX (December, 1946), 624-30.

[104]Hargrave, Marjorie, "The Relationship Between Achievement in Shorthand, Intelligence, Clerical Aptitude and English" (unpublished Master's thesis, University of Iowa, 1942).

Varah[108] administered the Michigan M-Scale to first- and second-semester high school shorthand students. The Scale, developed by Farquhar, polarized the theory that achievement-motivation is composed of: 1) long-term involvement; 2) unique accomplishment; and 3) competition with a standard of excellence. His assumption was that a continuum of achievement-motivation existed. The scale is composed of four measures: 1) a word-rating list which measures the student's perception of how her teacher perceives her; 2) a human trait inventory which measures personal characteristics of the individual; 3) a generalized situational choice inventory which measures what an individual would do in a given situation; 4) a preferred job characteristic scale which measures vocational choice.

Varah reported that the Scales, when correlated with a measure of mental ability, significantly increased (at the .05 level) the precision of predicting the achievement of the first-semester shorthand students, but they were not a factor in predicting second-semester shorthand achievement. Varah also reported that the word-rating list was a significant predictor of shorthand grades for both first- and second-semester shorthand students. He concluded that the academic self-concept of the student as measured by the word-rating list is a factor in learning in both first- and second-semester shorthand.

Varah further concluded that the best predictors of first-semester shorthand success were in order of importance: grade-point average, ninth grade English grades, tenth grade English grades, and mental ability. He reported the best predictors of second-semester

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[105]Hutson, op. cit. [106]Kreuger, op. cit. [107]Osborne, op. cit.

[108]Varah, op. cit.

shorthand success were in order of importance: shorthand I grade, grade-point average, tenth grade English grade, and mental ability.

Summary

While many research studies have been conducted seeking to identify instruments or characteristics useful in predicting shorthand success, these investigators have not provided conclusive predictive evidence. They have, however, provided information considered useful for guidance and counseling purposes.

A multitude of factors have been studied and their relation to a variety of research criteria tested and evaluated. Because of the variety of instructional levels and the number of cases involved, the research instruments used and the reliability of these instruments, and the method of conducting and reporting research findings, the results have varied widely. Moveover, direct comparison of research studies cannot generally be made because of the varied determinants of success or failure.

The conclusions of many prognostic studies were based on small samples as well as on student and teacher opinion and judgment. In addition, many researchers based their findings on subjective evaluation. Frequencies and percentages were often compared with no statistical tests to determine the significance of these differences. While studies were conducted on both the high school and college levels, the high school studies far outnumbered post-secondary investigations.

It was generally agreed that success in shorthand and transcription is not based upon a single trait or characteristic but upon a variety of different factors, many of which have not yet been measured. It was

also generally agreed that a combination of factors is a better predictor of beginning shorthand success than any single factor.

The following factors were suggested for guidance and counseling purposes: mental ability, English composition grades, average grades, and personal trait ratings. Intelligence scores and grades in previous shorthand courses were considered the best predictors for success in advanced shorthand courses.

A large number of prognostic studies placed emphasis on an instrument which could be used to predict shorthand achievement with little or no attention paid to the characteristics or traits of the students involved.

The intent of the present investigation is to study certain similarities or differences that may exist between the successful and unsuccessful college level shorthand students at two instructional levels. Unlike much of the prior prognostic research, it is not concerned with predicting shorthand achievement. The subjects of this study are those students classified as successful or unsuccessful according to teacher grades and enrolled in the beginning shorthand classes and the transcription classes at seven different Michigan colleges.

Certain factors studied in the present investigation have been previously examined with inconclusive or contradictory evidence; others have not been used in any other known study relating shorthand achievement to these factors. The method of statistical analysis used in this study is one that has not been used in any similar research study examined.

CHAPTER III

THE SOURCES OF DATA, INSTRUMENTATION, AND METHODOLOGY

To compare the similarities and differences in regard to the selected variables between successful and unsuccessful college level beginning shorthand students and successful and unsuccessful transcription students, data were collected at seven Michigan public-supported post-secondary institutions during the 1967 winter and spring school year.

Data were obtained through published standardized tests, skill achievement tests, student questionnaires, and student records.

Sources of Data

Selection of Schools. Eighteen post-secondary institutions located within a two-hundred mile radius of Kalamazoo, Michigan, offering both a beginning shorthand class and a transcription class during the period under investigation were asked to participate in this study. Seven schools offered both courses or had time available for participation and were, therefore, included in this study.

Participating Schools. Seven public-supported Michigan post-secondary institutions offering secretarial and/or business education programs participated in this study. These institutions included: three junior colleges, one four-year college, and three universities.

All participating institutions offered one or more beginning

shorthand class and one or more transcription class during the period under investigation. All of the participating institutions taught the Gregg Shorthand System. Six schools used the Diamond Jubilee Edition in all classes; one school used the Simplified Edition in all classes.

Table 1 shows the class enrollment of the beginning shorthand classes and the transcription classes by type of institution.

Table 1. Class Enrollment of Participating Institutions

Institution	Beginning Shorthand		Transcription		Total	
	N	%	N	%	N	%
University	127	57	114	55	241	56
College	41	18	48	23	89	21
Junior College	56	25	45	22	101	23
TOTAL	224	100	207	100	431	100

Subjects. The subjects of this study were those students who received an A or B and were classified as successful or those students who received a D or E and were classified as unsuccessful in the beginning shorthand classes and the transcription classes.

A total of 82 successful and 61 unsuccessful beginning shorthand students were identified from a total enrollment of 224 students. A total of 67 successful and 64 unsuccessful transcription students were identified from a total enrollment of 207 students.

The number of subjects under study according to the type of institution is presented in Tables 2 and 3.

Table 2. Beginning Shorthand Subjects by Type of Institution

Institution	Successful		Unsuccessful		Total	
	N	%	N	%	N	%
University	56	68	27	44	83	58
College	19	23	13	21	32	22
Junior College	7	9	21	35	28	20
TOTAL	82	100	61	100	143	100

Table 3. Transcription Subjects by Type of Institution

Institution	Successful		Unsuccessful		Total	
	N	%	N	%	N	%
University	38	57	35	55	73	56
College	18	27	11	17	29	22
Junior College	11	16	18	28	29	22
TOTAL	67	100	64	100	131	100

Nature of the Data Collected

Four methods of obtaining data for each subject were used: (1) five standardized tests; (2) skill achievement tests for the beginning shorthand classes and the transcription classes; (3) two student questionnaires; and (4) student records at each participating institution.

The Standardized Test Battery

A battery of standardized tests was chosen to measure selected characteristics, aptitudes, and abilities that seemed to correlate with the shorthand and transcription process based on empirical observation

and the conclusions of other investigators. These tests were administered to the beginning shorthand students and the transcription students.

The standardized battery included:

1. Brown-Holtzman Survey of Study Habits and Attitudes, The Psychological Corporation, New York, New York.

2. California Psychological Inventory, Consulting Psychologists Press, Palo Alto, California.

3. Minnesota Clerical Test, The Psychological Corporation, New York, New York

4. Watson-Glaser Critical Thinking Appraisal, Form YM, Harcourt, Brace & World, Inc., New York, New York.

5. Wellesley Spelling Scale, Form 1, California Test Bureau, Los Angeles, California.

The criteria used in selecting the standardized tests included:

1. All tests received favorable reviews in the Mental Measurements Yearbook, Volumes 4, 5, or 6.[1]

2. No tests in experimental stages were considered.

3. All tests were accompanied by a manual determined adequate by the Mental Measurements Yearbook giving information useful in test administering, scoring, and interpreting.

4. All tests were nonprojective and of the group variety.

5. No unusual training was required in test scoring or interpreting.

A local examiner, recommended by the department head of each participating institution, was hired and trained to administer the standardized battery and the project details at each school.

A booklet, prepared by the investigator, giving specific directions for administering each standardized test and other information relevant to this investigation was utilized by the local examiner under the guidance of the investigator (Appendix A).

Buros, Oscar (ed.), Mental Measurements Yearbook (Highland Park, New Jersey: The Grypohn Press, Volume 4, 1953: Volume 5, 1959; Volume 6, 1965).

Administering the Standardized Battery. The five standardized tests were administered by the local examiner according to the procedures specified in each test manual during the first ten weeks of class instruction. Provisions were made for absentees to make up each test within a one-week period.

Students and instructors were assured that all information was confidential and that no individual student, instructor, or school would be identified in any way.

Scoring the Standardized Battery. Two standardized tests, the Brown-Holtzman Survey of Study Habits and Attitudes and the Wellesley Spelling Scale were machine scored by the Western Michigan University Testing Bureau. The remaining three tests were scored by two different persons. In the event of a scoring discrepancy, the answer sheet was rechecked and a correct score obtained. A raw score was obtained for each standardized test.

A description of each standardized test will now be given.

Brown-Holtzman Survey of Study Habits and Attitudes (SSHA)

According to the manual:

> The fact that some students with apparently high scholastic aptitude do very poorly in school while others with only mediocre ability do well has presented a challenge to many educators. The Survey of Study Habits and Attitudes was developed to help meet this challenge. It is an easily administered measure of study methods, motivation for studying and certain attitudes toward scholastic activities in the classroom.
>
> The purposes of the SSHA are: (a) to identify students whose study habits and attitudes are different from those of students who earn high grades, (b) to aid in understanding students with academic difficulties, and (c) to provide a basis for helping such students to improve their study habits and attitudes and thus more fully realize their best potentialities.[2]

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[2]Brown, William F., and Holtzman, Wayne H., Survey of Study Habits and Attitudes Manual (New York: The Psychological Corporation, 1956), p. 3.

The Survey consists of 75 items; each item is answered according to a five-point scale: RARELY, SOMETIMES, FREQUENTLY, GENERALLY, ALMOST ALWAYS. The terms are defined on a percentage basis; for example, RARELY means from 0 to 15 percent of the time. High scores on the SSHA are characteristic of students who get good grades; low scores on the Survey tend to be characteristic of those who get low grades.

Deece believes:

> . . . the inventory is very heavily pointed in the direction of assessing motivation for study and attitudes towards academic work. This emphasis provides the most unique and valuable aspect of the Inventory.[3]

The reliability coefficient for women was found to be .84 according to the Spearman-Brown formula. The authors reported that the Survey's correlation with the American Council on Education Psychological Exam is low enough to indicate that the predictive powers of the SSHA rest on its measurement of traits largely untouched by such aptitude measures. Coefficients of correlations between the ACE and the SSHA ranged from .08 to .37 based on a sampling of 480 female high school students.[4]

California Psychological Inventory (CPI)

According to the manual:

> The California Psychological Inventory was created in the hope of attaining two goals of personality assessment. The first goal, largely theoretical in nature, has been to use and to develop descriptive concepts which possess broad personal and social relevance. Many of the standard personality tests and assessment devices available previously have been designed for use in special settings, such as the psychiatric clinic, or have been constructed to deal with a

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[3]Deece, James, "Review of the Brown-Holtzman Survey of Study Habits and Attitudes," Fifth Mental Measurements Yearbook, 1959, pp. 782-83.

[4]SSHA Manual, p. 9.

> particular problem, such as vocational choice. The present endeavor has been concerned with characteristics of personality which have a wide and pervasive applicability to human behavior, and which in addition, are related to the favorable and positive aspects of personality rather than to the morbid and pathological.[5]
>
> The second goal for the CPI has been the practical one of devising brief, accurate, and dependable subscales for the identification and measuring of the variables chosen for inclusion in the inventory. A further consideration has been that the instrument be convenient and easy to use and suitable for large-scale application.

The Inventory contains 480 items; subjects are asked to respond to each item as "True" or "False" according to whether they agree or disagree with the statement or feel that it is or is not true about them.

Kelley believes:

> . . . the CPI, in this reviewer's opinion, is one of the best, if not the best, available instrument of its kind. It was developed on the basis of a series of empirical studies and the evidence for the validity of its several scales is extensive.[6]

Each CPI scale is intended to cover one facet of interpersonal psychology; the scales are grouped into four broad categories, seeking to emphasize some of the psychological and psychometric clusterings which exist among them.[7]

CLASS I. MEASURES OF POISE, ASCENDENCY, AND SELF-ASSURANCE

1. Dominance
2. Capacity for status
3. Sociability
4. Social presence
5. Self-acceptance
6. Sense of well-being

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[5]Gough, Harrison, California Psychological Inventory Manual (Palo Alto: Consulting Psychologists Press, 1964), p. 5.

[6]Kelley, E. Lowell, "Review of California Psychological Inventory," Sixth Mental Measurements Yearbook, 1965, pp. 168-69.

[7]CPI Manual, p. 5.

CLASS II. MEASURES OF SOCIALIZATION, MATURITY, AND RESPONSIBILITY

7. Responsibility
8. Socialization
9. Self-control
10. Tolerance
11. Good impression
12. Communality

CLASS III. MEASURES OF ACHIEVEMENT POTENTIAL AND INTELLECTUAL EFFICIENCY

13. Achievement via conformance
14. Achievement via independence
15. Intellectual efficiency

CLASS IV. MEASURES OF INTELLECTUAL AND INTEREST MODES

16. Psychological-mindedness
17. Flexibility
18. Femininity

Names of the scales on the inventory were chosen to describe the kind of behavior they are designed to reflect. For example, a person scoring high on DOMINANCE would be expected to impress others as a forceful, persistent, self-assured, dominant person; an individual scoring low would be expected to be retiring, unassuming, perhaps inhibited and lacking in self-confidence.[8]

Test-retest reliabilities based on 200 persons retested after one to three weeks ranged from .49 to .87 with a median of .80. For high school female subjects tested after one year, the median test-retest correlation is .68.[9]

Kelley states:

> The manual does not report any reliability estimates based on a single administration, but presumably these would be higher than the test-retest consistency coefficients noted . . . hence sufficiently high for both group and individual use.[10]

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[8]CPI Manual, p. 8. [9]CPI Manual, p. 19. [10]Kelley, p. 168.

The Minnesota Clerical Test (MCT)

The Minnesota Clerical Test is a test of speed and accuracy in performing tasks related to clerical work. The test consists of two parts: Number Checking and Name Checking.[11]

In each part there are 200 items consisting of 100 identical pairs and 100 dissimilar pairs. Students are asked to check the identical pairs. The numbers in Number Checking range from three through twelve digits and the names in Name Checking contain from seven through seventeen letters. Separate time limits are used for the two parts; eight minutes for the number checking and seven minutes for the name checking.

Bair conducted a factor analysis of seventeen clerical aptitude tests and one general intelligence test measuring thirty-six different variables. Forty-one percent of the total variance was accounted for by three factors: perceptual analysis, speed, and comprehension of verbal relations--all of which were found to have heavy loadings in the Minnesota Clerical Test. He reports:

> The Minnesota Clerical Test, which involves checking pairs of numbers and names for similarities and differences, seems to be related positively to more general types of clerical aptitude tests than any other tests included in the battery.[12]

According to the manual, the determination of test reliability by correlating scores on odd and even items would be inappropriate because the test is a speed test. However, three studies are cited in which reliability coefficients are given; these ranged from .76 to .93

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[11]Andrew, Dorothy M., and Paterson, Donald G., Minnesota Clerical Test Manual (New York: The Psychological Corporation, 1959), p. 3.

[12]Bair, John T., "Factor Analysis of Clerical Aptitude Tests," Journal of Applied Psychology, XXXV (August, 1951), 245-49.

based on the Spearman rank order coefficients and .56 to .76 based on the Pearson product-moment coefficients.[13]

The Watson-Glaser Critical Thinking Appraisal, Form YM

The Watson-Glaser Critical Thinking Appraisal consists of a series of test exercises which require the application of some of the important abilities involved in critical thinking.[14]

In developing the Appraisal, the authors viewed critical thinking as a composite of attitudes, knowledges, and skills. The Appraisal consists of five subtests designed to measure different, though interdependent, aspects of critical thinking: The subtests are:[15]

Test 1 Inference. (20 items) Samples ability to discriminate among degrees of truth or falsity of inferences drawn from given data.

Test 2 Recognition of Assumptions. (16 items) Samples ability to recognize unstated assumptions or presuppositions which are taken for granted in given statements or assertions.

Test 3 Deduction. (25 items) Samples ability to reason deductively from given statements or premises; to recognize the relation of implication between propositions; to determine whether what may seem to be an application or a necessary inference from given premises is indeed such.

Test 4 Interpretation. (24 items) Samples ability to weigh evidence and to distinguish between (a) generalizations from given data that are not warranted beyond a reasonable doubt, and (b) generalizations which, although not absolutely certain or necessary, do seem to be warranted beyond a reasonable doubt.

Test 5 Evaluation of Arguments. (15 items) Samples ability to distinguish between arguments which are strong and relevant and those which are weak or irrelevant to a particular question at issue.

The authors do not enourage the use of the part-score on the test

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[14]Watson, Goodwin, and Glaser, Edward M., Critical Thinking Appraisal Manual (New York: Harcourt, Brace & World, Inc., 1964), p. 2.

[15]Ibid., p. 2.

to evaluate individual attainment since the part-scores are based on a relatively small number of items and, therefore, lack sufficient reliability.[16]

Hill believes:

> If, as this reviewer believes, critical thinking is a central goal of education, serious efforts to understand it and appraise it must be encouraged. The number of such efforts has been growing in recent years, and the Watson-Glaser Critical Thinking Appraisal is one of the useful instruments for this purpose.[17]

In relating critical thinking to general intelligence, the manual states:

> By their very nature, measures of critical thinking might be expected to show a relatively high relationship to measures of verbal intelligence, such as the Otis Quick-Scoring Mental Ability Test . . . However, an examination of the content of the various tests show that the tasks imposed by the Critical Thinking Appraisal are quite different from those presented in commonly used intelligence measures.[18]

The manual reports correlation coefficients between the Appraisal and various verbal intelligence measures and concludes:

> It appears, therefore, that a high level of 'intelligence' as measured by conventional tests may be necessary, but not sufficient, for high attainment in critical thinking. The obtained correlations, however, are not sufficiently high to warrant the substitution of conventional tests for the Critical Thinking Appraisal.[19]

The manual reports reliability data consisting of split-half

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[16]Ibid., p. 9.

[17]Hill, Walker H., "Review of the Watson-Glaser Critical Thinking Appraisal," Fifth Mental Measurements Yearbook, 1959, p. 796.

[18]Watson-Glaser Critical Thinking Appraisal Manual, p. 10.

[19]Ibid., p. 10.

reliability coefficients obtained from testing 20,312 students. Reliability coefficients ranged from .85 to .87 with a standard error of measurement of 3.7 to 4.3.[20]

The Wellesley Spelling Scale, Form 1

The Wellesley Spelling Scale consists of words that occur in the customary written vocabulary of the high school graduate. According to the authors, a person's score on this test is representative of the spelling he will use in the course of ordinary school or business writing.[21]

The test consists of fifty multiple-choice items. Each item contains a sentence with one word omitted. Under the sentence are four different spellings of the omitted word from which the correct spelling is chosen. The manual states:

> The three incorrect versions of the word, which are offered together with the correct form, are, in each case, those misspellings which appeared often in samples of students' written themes.[22]

The manual reports a reliability coefficient of the test for grade 13 calculated by the Kuder-Richardson formula 21 as .76 with a standard error of measurement of 3.43 (1,769 cases).[23]

The Classroom Achievement Tests

A battery of classroom achievement tests was developed and administered to the beginning shorthand classes and the transcription classes.

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[20] Ibid., p. 12

[21] Alper, Thelma G., and Mallory, Edith B., Wellesley Spelling Scale Manual (Los Angeles: California Test Bureau, 1957), p. 4.

[22] Ibid., p. 4. [23] Ibid., p. 3.

Beginning Shorthand Class Achievement Tests. Three skill achievement tests were administered to the beginning shorthand classes: (1) a theory test; (2) a brief form test; and (3) a shorthand reading test.

As both the Diamond Jubilee and Simplified Editions of the Gregg Shorthand System were taught in the participating institutions, a separate test was prepared for each edition.

Transcription Class Achievement Tests. Two skill achievement tests were administered to the transcription classes: (1) a series of four letters to be written in shorthand and transcribed on a typewriter; and (2) a straight-copy typing test.

The method of developing, administering, and scoring each classroom achievement test will now be described.

Shorthand Theory Test

A test of 100 stratified randomly selected shorthand theory words was administered to the beginning shorthand classes. (Appendix I and J)

Test Development

1. All the enumerated theory principles in a beginning Gregg Shorthand Book were numbered (brief form and phrase paragraphs were disqualified).[24]

2. A total of 120 enumerated theory principles in 48 chapters of the Diamond Jubilee Edition were identified. These principles were consecutively numbered and listed; a table of random numbers was used to select 50 principles from each half of the list.

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[24]Leslie, Louis A., Zoubek, Charles E., and Hosler, Russell J., Gregg Shorthand for Colleges, Volume One, Diamond Jubilee Series (New York: Gregg Division, McGraw-Hill Book Company, 1965); and Gregg Shorthand Simplified for Colleges, Volume One, Second Edition, 1958.

3. An example will illustrate how each specific theory word was selected:

The word ending rity (Lesson 39, enumerated principle 347) was selected from the list of 120 identified theory principles. Each word using the rity principle in Lesson 39 was consecutively numbered; seventeen such words were identified. A table of random numbers was used to select the word popularity to include on the theory test.

4. The same procedure was followed in developing a 100 word theory test for the Simplified Edition (138 enumerated theory principles were identified).

Test Administration

1. The test was announced to the students several days in advance.

2. Within one week after completing all of the theory lessons in the beginning college textbook, the classroom instructor dictated each theory word at ten-second intervals.

3. Students transcribed the words in longhand in a 20-minute time period on answer sheets provided.

Test Scoring

1. Each test was scored by two different persons; in the event of a discrepancy, the paper was rechecked and a correct score obtained.

2. Papers were scored on a basis of all-right or all-wrong; that is, both the shorthand outline (dictionary accuracy) and the transcript for the outline must be correct. If the shorthand outline had more than one meaning, students were required to transcribe all meanings in order to receive credit.

3. Spelling was not considered.

4. The test score was based on the total number of correct items.

Shorthand Brief Form Test

A list of 100 randomly selected brief forms was administered to the beginning shorthand classes. (Appendix G and H)

Test Development

1. All the brief forms in both shorthand editions were consecutively numbered (129 brief forms representing 148 meanings in the Diamond Jubilee Edition; 184 brief forms representing 227 meanings in the Simplified Edition).

2. A table of random numbers was used to select 100 brief forms for each edition.

Test Administration

1. The test was announced to the students several days in advance.

2. Within one week after completing the last set of brief forms in the beginning college textbook, the classroom instructor dictated each brief form at eight-second intervals.

3. Students transcribed the brief forms in longhand in a twenty-minute time period on answer sheets provided.

Test Scoring

1. Each test was scored by two different persons; in the event of a discrepancy, the paper was rechecked and a correct score obtained.

2. Papers were scored on a basis of all-right or all-wrong; that is, both the shorthand outline (dictionary accuracy) and the transcript for the outline must be correct. If the shorthand outline had more than one meaning, students were required to transcribe all meanings in order to receive credit.

3. Spelling was not considered.

4. The test score was based on the total number of correct items.

Shorthand Reading Test

A shorthand reading test was administered to the beginning shorthand classes.

Test Development

1. A letter was selected for each shorthand edition from a textbook not used by any of the beginning classes.[25]

2. The two letters were subjected to a writing difficulty formula and found to be of comparable difficulty.[26]

3. Each textbook shorthand plate was photocopied, duplicated, and prepared in booklet form.

Test Administration

1. Within two weeks after completing the last theory chapter in the beginning college textbook, the class instructor distributed the test booklet to each student.

2. Students were allowed 15 minutes to transcribe the shorthand plate material into longhand.

Test Scoring

1. Each letter was scored by two different persons; in the event of a discrepancy, the paper was rechecked and a correct score obtained.

2. One point was deducted for each of the following errors:

words omitted
words added
words substituted

3. Spelling errors were not considered.

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[25]Letter 80, 154 words, Gregg Transcription for Colleges, Diamond Jubilee Series, 1966; Letter 59, 154 words, Gregg Transcription for Colleges, Simplified, 1959.

[26]Uthe, Elaine F., "An Evaluation of the Difficulty Level of Shorthand Dictation Material" (unpublished Ph. D. dissertation, University of Minnesota, 1966).

4. Test scores were based on the percent of words correctly transcribed (other than spelling).

Transcription Letters

Four letters were dictated at speeds of 60, 80, 100, and 120 words-a-minute for three minutes to the transcription classes. (Appendix D)

Test Development

1. The four letters were prepared by Uthe of MSU and subjected to a shorthand writing difficulty formula; according to this formula, all of the letters were found to be of comparable difficulty.[27]

Test Administration

1. The letters were dictated by the class instructor during the last four weeks of class instruction.

2. No previews were given.

3. Students were permitted to use a dictionary, eraser, and a secretarial manual while transcribing the letters on a typewriter.

4. The time required to complete each transcript was recorded on each letter though not considered in the scoring or data analysis.

Test Scoring

1. Each letter was scored by two different persons; in the event of a discrepancy, the letter was rechecked and a correct score obtained.

2. One point was deducted for each of the following errors:

spelling errors
words omitted
words added
words substituted
typing errors

3. Papers were scored on a basis of 95 percent accuracy, an

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[27] Ibid.

accepted business education practice. Thus, each transcript was marked "pass" or "fail."

Typing Test

A three-minute straight-copy typing test was administered to measure the gross typing speed and accuracy of the transcription classes.

According to West:

> One, 2- or 3-minute timings furnish an adequate measure of a person's stroking speed, and longer timings are not necessary when the objective is merely to determine the status of students in relation to each other. The student's ranking for speed on a short timing will very closely approximate his ranking on a longer timing.[28]

Test Development

1. The material to be typed was selected and photocopied from a textbook not used in any of the participating schools.[29]

Test Administration

1. During the tenth week of class instruction, each class instructor administered the three-minute timing.

2. Students were given two attempts on the same copy and asked to submit the best attempt.

Test Scoring

1. Each paper was scored for speed and accuracy by two different persons; in the event of a discrepancy, the paper was rechecked and a correct score obtained.

2. Each paper was scored for gross words-a-minute and total errors.

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[28]West, Leonard J., "Implications of Research for Teaching Typewriting," Delta Pi Epsilon Research Bulletin No. 2, 1962, p. 24.

[29]Lessenberry, D. D., and Wanous, S. J., College Typewriting (Cincinnati: South-Western Publishing Co., 1954), p. 136.

Personal Student Data

The following data were obtained from two student questionnaires and from examining student records.

Office Work Experience Record. (Appendix C) Office work experience was recorded according to job title and period of employment. A special check-list provided space for indicating total hours spent each week in typing and in writing and transcribing shorthand.[30]

Student Information Form. (Appendix B) Information obtained from this form included: college major and class; number, place, and duration of all shorthand courses previously taken; number, place, and duration of all typing courses previously taken.

Student Records. Information obtained from examining institution records of subjects included: point-average as of the end of the school term under investigation; the college English composition grade; and when possible, the verification of the shorthand and typing courses reported on the student information form.

Summary of Variables by Class

The nature and method of obtaining the research data is summarized below:

The five standardized tests were administered in both the beginning shorthand classes and the transcription classes; certain variables, however, were obtained at one instructional level but not the other.

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[30]Because a limited number of students had office experience using shorthand and transcribing skills, this information will not be reported.

Data Obtained in the Beginning Shorthand and the Transcription Classes

Variable	Method
1. College major	Student questionnaire
2. Year in college	
3. Number of weeks of previous shorthand instruction	
4. Number checking	Minnesota Clerical Test
5. Name checking	
6. Study habits and attitudes	Brown-Holtzman Survey of Study Habits and Attitudes
7. Spelling ability	Wellesley Spelling Scale, Form 1
8. Critical thinking	Watson-Glaser Critical Thinking Appraisal, Form YM
9. Dominance	California Psychological Inventory
10. Capacity for status	
11. Sociability	
12. Social presence	
13. Self-acceptance	
14. Sense of well-being	
15. Responsibility	
16. Socialization	
17. Self-control	
18. Tolerance	
19. Good impression	
20. Communality	
21. Achievement via conformance	
22. Achievement via independence	
23. Intellectual efficiency	
24. Psychological-mindedness	
25. Flexibility	
26. Femininity	
27. College grade-point average	Student records
28. College English composition grade	

Data Obtained in the Beginning Shorthand Classes Only

1. Shorthand brief form test	Random selection of 100 brief forms
2. Shorthand theory test	Stratified random selection of 100 theory words

Variable	Method
3. Shorthand reading test	Transcribing a shorthand plate into longhand

Data Obtained in the Transcription Classes Only

1. Number of hours of office work experience involving the use of a typewriter	Student questionnaire
2. Place of previous shorthand courses	
3. Typing speed	Three-minute straight-copy timed writing
4. Typing accuracy	
5. Number of weeks of previous typewriting instruction	Student questionnaire
6. Transcription ability	Four 3-minute letters at 60, 80, 100, and 120 words-a-minute and a typed transcript

Summary of Variables Obtained

A. Total variables for the beginning shorthand classes	31
B. Total variables for the transcription classes	34
	65

Statistical Procedures and Hypotheses Tested

The methods of statistical analysis used in this study were Student's t-test, chi-square, and point-biserial correlation.[31]

Student's t-test. The student's t-test was used to test the hypotheses that there were no significant differences in the means in the selected continuous variables and the successful and unsuccessful college level beginning shorthand students and the successful and

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[31]Downie, N. M. and Heath, R. W., Basic Statistical Methods (New York: Harper & Row, Publishers, 1965)

unsuccessful college level transcription students. These included:

Variables administered at both instructional levels:

A. The five standardized tests (twenty-three variables)
B. The college grade-point average

Variables administered at the beginning shorthand level:

A. The shorthand brief form test
B. The shorthand theory test
C. The shorthand reading test

Variables administered at the transcription level:

A. The speed on a straight-copy typing test
B. The accuracy on a straight-copy typing test

The F test was used to compare the variances of the two sample groups. If the F was significant at the .05 level, a computed t formula was used; if not, the standard Student's t-test was used.

The formulas used were:

F test: $F = \frac{s_1^2}{s_2^2}$

Where s_1^2 = the larger of the two sample variances

s_2^2 = the smaller of the two sample variances

Student's t-test: $t : \frac{\bar{X}_1 - \bar{X}_2}{S_{D_X}}$

Where $\bar{X}_1$ = the means of group 1

$\bar{X}_2$ = the means of group 2

S_{D_X} = the standard error of the difference between two means

Computed t: $t.05 = \frac{S_{\bar{X}_1}^2 (t_1) + S_{\bar{X}_2}^2 (t_2)}{S_{\bar{X}_1}^2 + S_{\bar{X}_2}^2}$

Where t_1 = the 5% value for t at $N_1 - 1$ degrees of freedom

t_2 = the 5% value for t at $N_2 - 1$ degrees of freedom

Chi-Square. The chi-square technique was used to analyze the differences and the significance of these differences between the

successful and unsuccessful groups in the selected discrete variables. These included:

Variables administered at both instructional levels:

A. The college major
B. The year in school
C. The college English composition grade
D. The number of weeks of previous shorthand instruction

Variables administered at the transcription level:

A. The number of weeks of previous typewriting instruction
B. The place of previous shorthand instruction
C. The number of hours of office work experience involving the use of a typewriter
D. The transcription ability

In cases of df = 1 (degrees of freedom), the Yates correction formula was applied. The Yates formula used was:

$$x^2 = \sum \frac{(|O - E| - .5)^2}{E}$$

The chi-square formula used was:

$$x^2 = \sum \frac{(O - E)^2}{E}$$

Where O = the observed frequencies
E = the expected frequencies

Point-Biserial Correlation. When one of the two variables in a correlation problem is a dichotomy (successful versus unsuccessful students), the point-biserial r is the appropriate type of correlation coefficient to use.[32]

The point-biserial correlation technique was used to determine the correlation between the continuous variables employed at the two achievement levels.

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[32] Ibid.

The point-biserial formula used was:

$$r_{pb} = \frac{\bar{X}_p - \bar{X}_t}{s_t}\sqrt{\frac{p}{q}}$$

Where $\bar{X}_p$ = the mean scores of the successful group

$\bar{X}_t$ = the mean of the total test scores

s_t = the standard deviation of the test

p = the proportion of the total group answering the item correctly

$q = 1 - p$

Since r_{pb} depends directly upon the difference between the means, a significant departure from a mean difference of zero also indicates a significant correlation. A t-test of the difference between means was used to test the significance of the departure of the correlation coefficient from zero. The formula used was:

$$t = \frac{r_{pb}\sqrt{N - 2}}{\sqrt{1 - r_{pb}^2}}$$

Where r_{pb} = the point-biserial coefficient

N = the number of subjects in the total sample

Hypotheses

The hypotheses tested at the .05 level were:[33]

A. There is no difference in the successful and unsuccessful college level beginning shorthand students and:

1. college major
2. year in school
3. number of weeks of previous shorthand instruction
4. college English composition grade

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[33] If the hypotheses were rejected, the alpha level reported is an approximation of the probability of the Type 1 error indicated by the statistic used.

5. knowledge of brief forms, according to a random selection of brief forms

6. knowledge of shorthand theory, according to a stratified random selection of theory principles

7. shorthand reading ability, according to a longhand transcript of a shorthand plate

8. number checking, according to the Minnesota Clerical Test

9. name checking, according to the Minnesota Clerical Test

10. study habits and attitudes, according to the Brown-Holtzman Survey of Study Habits and Attitudes

11. spelling ability, according to the Wellesley Spelling Scale

12. critical thinking, according to the Watson-Glaser Critical Thinking Appraisal

13. dominance, according to the CPI[34]

14. capacity for status, according to the CPI

15. sociability, according to the CPI

16. social presence, according to the CPI

17. self-acceptance, according to the CPI

18. sense of well-being, according to the CPI

19. socialization, according to the CPI

20. responsibility, according to the CPI

21. self-control, according to the CPI

22. tolerance, according to the CPI

23. good impression, according to the CPI

24. communality, according to the CPI

25. achievement via conformance, according to the CPI

26. achievement via independence, according to the CPI

27. intellectual efficiency, according to the CPI

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[34]California Psychological Inventory

28. psychological-mindedness, according to the CPI

29. flexibility, according to the CPI

30. femininity, according to the CPI

31. college grade-point average

B. There is no difference in the successful and unsuccessful college level transcription students and:

1. college major

2. year in school

3. number of weeks of previous shorthand instruction

4. place of previous shorthand instruction

5. number of weeks of previous typewriting instruction

6. number of hours of office work experience involving the use of a typewriter

7. college English composition grade

8. transcription achievement, according to four letters dictated at 60, 80, 100, and 120 words a minute and transcribed on a typewriter

9. number checking, according to the Minnesota Clerical Test

10. name checking, according to the Minnesota Clerical Test

11. study habits and attitudes, according to the Brown-Holtzman Survey of Study Habits and Attitudes

12. spelling ability, according to the Wellesley Spelling Scale

13. critical thinking, according to the Watson-Glaser Critical Thinking Appraisal

14. dominance, according to the CPI[35]

15. capacity for status, according to the CPI

16. sociability, according to the CPI

17. social presence, according to the CPI

18. self-acceptance, according to the CPI

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[35]California Psychological Inventory

19. sense of well-being, according to the CPI
20. responsibility, according to the CPI
21. socialization, according to the CPI
22. self-control, according to the CPI
23. tolerance, according to the CPI
24. good impression, according to the CPI
25. communality, according to the CPI
26. achievement via conformance, according to the CPI
27. achievement via independence, according to the CPI
28. intellectual efficiency, according to the CPI
29. psychological-mindedness, according to the CPI
30. flexibility, according to the CPI
31. femininity, according to the CPI
32. college grade-point average
33. typing accuracy, according to a straight-copy typing test
34. typing speed, according to a straight-copy typing test

CHAPTER IV

ANALYSIS OF THE SUCCESSFUL AND UNSUCCESSFUL COLLEGE LEVEL BEGINNING SHORTHAND STUDENTS

The purpose of this chapter is to present an analysis of the successful and unsuccessful college level beginning shorthand students in regard to the selected variables.

The categories successful and unsuccessful were dependent on the final grade received in the beginning shorthand classes. Students who received a grade of A or B were classified as successful; students who received a grade of D or E were classified as unsuccessful.

The chapter is divided into four parts: 1) a presentation of the discrete variables using the chi-square technique of analysis; 2) a presentation of the continuous variables using the Student's t-test of analysis; 3) a presentation of the continuous variables using the point-biserial correlation technique of analysis; and 4) a summary of the similarities or differences that may exist between the successful and unsuccessful groups.

The letters S and U have been used in the tables to denote the successful and unsuccessful groups.

Part I

Discrete Variables

This section is concerned with an analysis of four discrete variables using the chi-square technique. These variables are: 1) college major; 2) year in college; 3) number of weeks of previous shorthand instruction; and 4) college English composition grade.

College Major - Hypothesis A1

The hypothesis that there is no difference in the college major of the successful and unsuccessful college level beginning shorthand students was rejected at the .01 level.

Table 4 shows that 50 percent of the successful students were two-year secretarial majors while 73 percent of the unsuccessful students were two-year secretarial majors.

Twenty-four percent of the successful students were business education majors while 15 percent of the unsuccessful students were business education majors. Twenty-four percent of the successful students, however, majored in other college programs.[1]

When considering the total sample of the beginning shorthand students, 20 percent of all the students were business education majors; 59 percent were two-year secretarial majors; 5 percent were four-year secretarial majors; and 16 percent majored in other college programs.

Table 4 indicates that business education majors and majors in

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[1] These include: Successful (19), elementary education, 2; geography, 1; English, 3; foreign language, 2; home economics, 2; general college, 6; sociology, 3. Unsuccessful group (4), art, 1; physical education, 2; and general college, 1.

"other" college programs were generally more successful in beginning shorthand than two-year secretarial majors.

Table 4. Number and Percentage of the Successful and Unsuccessful College Level Beginning Shorthand Students by College Major

Category	College Major: Business Education N	%	Two-Year Secretarial N	%	Four-Year Secretarial N	%	Other N	%	Total by Category N	%
S	20	24	41	50	2	2	19	24	82	57
U	9	15	44	73	4	6	4	6	61	43
Total by Major	29	20	85	59	6	5	23	16	143	100

x^2: 11.9002; significant at .01 level
df: 3

Year in College - Hypothesis A2

The hypothesis that there is no difference in the year in college of the successful and unsuccessful college level beginning shorthand students was not rejected at the .05 level.

Table 5 shows that 69 percent of the beginning shorthand students were college freshmen; 25 percent of the beginning shorthand students were college sophomores; 6 percent of the beginning shorthand students were college juniors. These figures reflected the large percentage of two-year secretarial students in the sample who began their shorthand training immediately upon entering college. They further indicated that business education students also started their shorthand training early in their college careers.

Sixty-six percent of the successful students were college freshmen while only 28 percent of the successful students were college

sophomores. In the unsuccessful group, 72 percent were college freshmen and 21 percent college sophomores.

Table 5 indicates that the year in college was not a factor in beginning shorthand success.

Table 5. Number and Percentage of the Successful and Unsuccessful College Level Beginning Shorthand Students by Year in College

Category	Year in College						Total by Category	
	Freshman		Sophomore		Junior			
	N	%	N	%	N	%	N	%
S	54	66	23	28	5	6	82	57
U	44	72	13	21	4	7	61	43
Total by Yr. in College	98	69	36	25	9	6	143	100

x^2: .8435; not significant at .05 level
df: 2

Previous Shorthand Instruction - Hypothesis A3

The hypothesis that there is no difference in the number of weeks of previous shorthand instruction of the successful and unsuccessful college level beginning shorthand students was not rejected at the .05 level.

Table 6 shows that 85 percent of the beginning shorthand students in the total sample entered the beginning college shorthand class with no previous shorthand instruction at any instructional level. Fifteen percent of the total sample had some previous shorthand training (from 20-36 weeks) before entering the beginning college shorthand class.

Table 6 indicates that prior shorthand instruction did not seem to be a significant factor in beginning shorthand success at the college level.

Table 6. Number and Percentage of the Successful and Unsuccessful College Level Beginning Shorthand Students by Number of Weeks of Previous Shorthand Instruction

Category	Weeks of Previous Shorthand: No Previous Shorthand N	%	20-36 Weeks N	%	Total by Category N	%
S	71	87	11	13	82	57
U	51	84	10	16	61	43
Total by Previous Shorthand	122	85	21	15	143	100

x^2: .2477; not significant at .05 level
df: 1

College English Composition Grade - Hypothesis A4

The hypothesis that there is no difference in the college English composition grade of the successful and unsuccessful college level beginning shorthand students was rejected at the .001 level.

Table 7 shows that 12 percent of the successful group received an English composition grade of A and that 41 percent received a grade of B. Only one unsuccessful student received an English composition grade of A and only one unsuccessful student received a grade of B.

Ninety-two percent of the successful beginning students received an English composition grade of C or better in contrast to 48 percent of the unsuccessful beginning students who received a grade of C or better.

Eight percent of the 82 successful students received a grade of D in the English composition course in contrast to 52 percent of the unsuccessful group; 39 percent of the successful group and 44 percent

of the unsuccessful group received a grade of C.

Forty-one percent of the total sample received an English composition grade of C.

The findings of this study agree with other investigators who reported that an English composition grade is a useful predictor of shorthand success. The findings further indicate that the college English composition grade was a significant discriminator of high and low beginning shorthand achievement.

Table 7. Number and Percentage of the Successful and Unsuccessful College Level Beginning Shorthand Students by College English Composition Grade

Category	College English Composition Grade								Total by Category	
	A		B		C		D			
	N	%	N	%	N	%	N	%	N	%
S	10	12	34	41	32	39	6	8	82	57
U	1	2	1	2	27	44	32	52	61	43
Total by Eng. Comp. Grade	11	7	35	25	59	41	38	27	143	100

x^2: 54.7887; significant at .001 level
df: 3

Part II

Continuous Variables

The purpose of this section is to analyze by the Student's t-test any significant differences between the mean scores of the successful and unsuccessful college level beginning shorthand students in terms of 27 continuous variables.

Nine continuous variables and their mean scores and t values are

presented in Table 8. The 18 scales of the California Psychological Inventory and their respective mean scores and t values are presented in Table 9.

Table 8. t-test Analysis of the Differences Between the Means of the Successful and Unsuccessful College Level Beginning Shorthand Students and Nine Continuous Variables

Variable	Mean Scores S N: 82	Mean Scores U N: 61	Standard Dev. S	Standard Dev. U	t
1. Classroom Achievement Tests					
a. brief form	98.02	86.70	2.58	15.20	6.62*
b. theory	67.75	34.34	18.58	22.34	9.76*
c. reading	97.30	76.13	3.21	25.78	7.36*
2. Minnesota Clerical Test					
a. number checking	132.20	126.03	25.89	24.83	1.44
b. name checking	143.42	123.63	27.68	25.53	4.36*
3. Brown-Holtzman Survey of Study Habits and Attitudes	31.24	24.01	10.58	8.55	4.37*
4. Wellesley Spelling Scale	36.25	30.27	5.57	6.09	6.09*
5. Watson-Glaser Critical Thinking Appraisal	67.95	61.93	9.49	8.24	3.96*
6. Grade-Point Average	256.93	149.78	48.16	57.75	12.07*

*significant at .001 level

Classroom Achievement Tests - Hypotheses A5 - A7

Three hypotheses were stated regarding the classroom achievement of the successful and unsuccessful beginning shorthand students.

A5. The hypothesis that there is no difference in the mean scores of a shorthand brief form test (according to a test based on a random selection of brief forms) of the successful and unsuccessful college level beginning shorthand students was rejected at the .001 level.

A6. The hypothesis that there is no difference in the mean scores of a shorthand theory test (according to a test based on a stratified random selection of theory principles) of the successful and unsuccessful college level beginning shorthand students was rejected at the .001 level.

A7. The hypothesis that there is no difference in the mean scores of a shorthand reading test (according to a test based on a longhand transcript of a shorthand plate) was rejected at the .001 level.

The mean scores of each group according to the three classroom achievement variables and the t values are listed in Table 8, page 73.

Thus, the classroom achievement tests administered as part of this study appear to measure certain of the same abilities as those on which the participating instructors based their final grades.

Minnesota Clerical Tests - Hypotheses A8 and A9

Two hypotheses were stated regarding the subtests of the Minnesota Clerical Test.

A8. The hypothesis that there is no difference in the mean scores of the number checking subtest of the Minnesota Clerical Test of the successful and unsuccessful college level beginning shorthand students was not rejected at the .05 level.

A9. The hypothesis that there is no difference in the mean scores of the name checking subtest of the Minnesota Clerical Test of the

successful and unsuccessful college level beginning shorthand students was rejected at the .001 level.

Both the successful and unsuccessful students fell into the fiftieth percentile in number checking when compared with inexperienced female typists and stenographers hired at banks (N: 300; mean: 129).[2] When compared with the same normative group, the successful beginning shorthand students, with a mean score of 143.42 (see Table 8) on the name checking test, fell into the seventieth percentile; the unsuccessful beginning shorthand students, with a mean score of 123.63, fell into the fortieth percentile.

The findings of this study indicate that a significant relationship exists between college level beginning shorthand success and the name checking test of the Minnesota Clerical Test.

Brown-Holtzman Survey of Study Habits and Attitudes - Hypothesis A10

The hypothesis that there is no difference in the mean scores of the Brown-Holtzman Survey of Study Habits and Attitudes of the successful and unsuccessful college level beginning shorthand students was rejected at the .001 level.

According to the authors of the Survey, high scores on the Survey are characteristic of students who get good grades while low scores tend to be characteristic of those who get low grades.[3]

The successful group (Table 8, page 73), with a mean score of 31.24, fell into the fiftieth percentile of the college women norms (N: 1446; mean: 31.6). The unsuccessful group, with a mean score of

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[2] MCT Manual, p. 6. [3] SSHA Manual, p. 5.

24.01, fell into the twentieth percentile of college women norms.[4] These same percentiles also apply to the high school female norms (N: 1430; mean: 31.1).

Those students who did succeed in beginning shorthand had good study habits as well as better attitudes toward school work according to the characteristics measured by the Brown-Holtzman Survey of Study Habits and Attitudes. The findings of this study support the belief of many shorthand teachers who feel that it is necessary for beginning shorthand students to spend a substantial amount of time each day in thoughtful study.

The Wellesley Spelling Scale - Hypothesis All

The hypothesis that there is no difference in the mean scores of the Wellesley Spelling Scale of the successful and unsuccessful college level beginning shorthand students was rejected at the .001 level.

The successful group (Table 8, page 73), with a mean score of 36.25, fell into the sixtieth percentile of the Grade 13 norms (N: 1933, both men and women included; mean not listed).[5] The unsuccessful group, with a mean score of 30.27, fell into the thirtieth percentile of the same normative group.

Although other research studies found slight or no relation between spelling achievement and shorthand success, no known study compared the spelling achievement of high and low shorthand achievers. The findings of this study indicate that spelling ability significantly distinguishes high and low beginning shorthand achievers.

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[4] Ibid.

[5] Wellesley Spelling Scale Manual, p. 12.

The Watson-Glaser Critical Thinking Appraisal - Hypothesis A12

The hypothesis that there is no difference in the mean scores of the Watson-Glaser Critical Thinking Appraisal of the successful and unsuccessful college level beginning shorthand students was rejected at the .001 level.

The successful group (Table 8, page 73), with a mean score of 67.95, fell into the sixtieth percentile of a Grade 12 normative group (N: 1800, both men and women included; mean: 65.6).[6] The unsuccessful group, with a mean score of 61.93, fell into the thirty-eighth percentile of this same normative group.

When the mean scores were compared with the norms of 5,297 liberal arts college freshmen men and women (mean: 70.2), the successful group fell into the fortieth percentile and the unsuccessful group fell into the twentieth percentile.[7]

The findings of this study indicate that a significant relationship exists between college level beginning shorthand success and critical thinking, as measured by the Watson-Glaser Critical Thinking Appraisal.

California Psychological Inventory (CPI) - Hypotheses A13 - A30

Eighteen hypotheses were stated that there were no differences between the successful and unsuccessful college level beginning shorthand students in regard to each of the scales of the California Psychological Inventory (CPI).

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[6] Watson-Glaser Manual, p. 5. [7] Ibid.

Ten of these hypotheses were rejected and eight were not rejected. The CPI Scales and their respective mean scores and *t* values are listed in Table 9.

The authors of the CPI do not imply that the scales are independent of each other; they suggest that in interpreting these findings, weight be given to the interaction of the scales and to the patterns of individual profiles.[8] Therefore, care must be exercised in comparing group characteristics with those of individual characteristics.

The mean scores of the beginning shorthand students in this study and those of high school and college female subjects cited by the CPI Manual are given in Appendix K.[9] Examination revealed that the raw scores of the college students in this study approximate those of the high school sample cited in the Manual. Appendix M lists a set of adjectives which describe high and low scorers on each CPI Scale.[10] Again, these adjectives apply to individuals rather than groups.

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[8] CPI Manual, p. 9. [9] Ibid., p. 35. [10] Ibid., pp. 10-11.

Table 9. t-test Analysis of the Differences Between the Means of the Successful and Unsuccessful College Level Beginning Shorthand Students on the Eighteen Scales of the California Psychological Inventory

Variable	Mean Scores S N: 82	Mean Scores U N: 61	Standard Dev. S	Standard Dev. U	t
Dominance	24.10	23.36	6.33	6.00	.74
Capacity for status	18.39	16.80	3.72	4.16	2.39**
Sociability	23.24	23.01	5.11	5.29	.25
Social presence	34.15	33.91	5.99	7.16	.21
Self-acceptance	21.12	20.90	3.81	4.06	.33
Sense of well-being	33.80	31.59	5.69	6.33	2.19*
Responsibility	29.90	26.80	5.01	4.99	3.66****
Socialization	37.41	34.60	6.27	6.98	2.52**
Self-control	26.07	22.90	7.95	8.71	2.26*
Tolerance	19.74	18.09	5.51	5.38	1.78
Good impression	14.12	13.40	5.75	6.37	.69
Communality	25.90	24.54	2.01	3.50	2.92***
Achievement via conformance	24.79	21.93	5.17	5.07	3.29****
Achievement via independence	18.48	17.11	4.30	3.63	2.01*
Intellectual efficiency	35.69	31.90	6.76	6.99	3.26***
Psychological-mindedness	9.21	8.16	2.64	2.29	2.49**
Flexibility	9.82	10.31	3.69	3.97	-.74
Femininity	23.01	22.26	3.77	3.25	1.24

*significant at .05 level
**significant at .02 level
***significant at .01 level
****significant at .001 level

The hypotheses rejected at the levels indicated include:

A14. Capacity for status. Rejected at the .02 level.

The purpose of this scale is to serve as an index of an individual's capacity for status (not his actual or achieved status. The scale attempts to measure the personal qualities and attributes which underlie and lead to status.

A18. Sense of well-being. Rejected at the .05 level.

The purpose of this scale is to identify persons who minimize their worries and complaints and who are relatively free from self-doubt and disillusionment.

A19. Responsibility. Rejected at the .001 level

The purpose of this scale is to identify persons of conscientious, responsible, and dependable disposition and temperament.

A20. Socialization. Rejected at the .02 level.

The purpose of this scale is to indicate the degree of social maturity, integrity, and rectitude which the individual has attained.

A21. Self-control. Rejected at the .05 level.

The purpose of this scale is to assess the degree and adequacy of self-regulation and self-control and freedom from impulsivity and self-centeredness.

A24. Communality. Rejected at the .01 level.

The purpose of this scale is to indicate the degree to which an individual's reactions and responses correspond to the modal ("common") pattern established for the inventory.

A25. Achievement via conformance. Rejected at the .001 level.

The purpose of this scale is to identify those features of interest and motivation which facilitate achievement in any setting where conformance is a positive behavior.

A26. Achievement via independence. Rejected at the .05 level.

The purpose of this scale is to identify those factors of interest and motivation which facilitate achievement in any setting where autonomy and independence are positive behaviors.

A27. Intellectual efficiency. Rejected at the .01 level.

The purpose of this scale is to indicate the degree of personal and intellectual efficiency which the individual has attained.

A28. Psychological-mindedness. Rejected at the .02 level.

The purpose of this scale is to measure the degree to which the individual is interested in, and responsive to, the inner needs, motives, and experiences of others.

The hypotheses not rejected at the .05 level include:

A13. Dominance.

The purpose of this scale is to assess factors of leadership ability, dominance, persistence, and social initiative.

A15. Sociability.

The purpose of this scale is to identify persons of outgoing, sociable, participative temperament.

A16. Social presence.

The purpose of this scale is to assess factors such as poise, spontaneity, and self-confidence in personal and social interaction.

A17. Self-acceptance.

The purpose of this scale is to assess factors such as sense of personal worth, self-acceptance, and capacity for independent thinking and action.

A22. Tolerance.

The purpose of this scale is to identify persons with permissive, accepting, and non-judgmental social beliefs and attitudes.

A23. Good impression.

The purpose of this scale is to identify persons capable of creating a favorable impression, and who are concerned about how others react to them.

A29. Flexibility.

The purpose of this scale is to indicate the degree of flexibility and adaptability of a person's thinking and social behavior.

A30. Femininity.

> The purpose of this scale is to assess the masculinity or femininity of interests. (High scores indicate more feminine interests, low scores more masculine.)

Significant differences were found in the mean scores of all of the scales in the broad category "Measures of Achievement Potential and Intellectual Efficiency." These scales included: Achievement via conformance (.001); Achievement via independence (.05); and Intellectual efficiency (.01).

Significant differences were found in the mean scores of four scales in the broad category "Measures of Socialization, Maturity, and Responsibility." These included: Responsibility (.001); Socialization (.02); Self-control (.05); and Communality (.01).

Significant differences were found in the mean scores of two scales in the broad category "Measures of Poise, Ascendancy, and Self-Assurance." These included: Capacity for status (.02); and Sense of well-being (.05).

A significant difference was found in one scale in the broad category "Measures of Intellectual and Interest Modes." This scale was: Psychological-mindedness (.02).

No known research study has related psychological characteristics to shorthand achievement at any instructional level. The findings of this study indicate that a significant relationship existed between college level beginning shorthand success or non-success and ten of the scales of the California Psychological Inventory.

Grade-Point Average - Hypothesis A31

The hypothesis that there is no difference in the mean scores of

the college grade-point average of the successful and unsuccessful college level beginning shorthand students was rejected at the .001 level (Table 8, page 73).

The grade-point was based on the accumulated average of each student in this study at the close of the school term under investigation.

The findings of this study agree with other investigators who reported average grades to be one of the most useful factors in predicting shorthand success.

Part III

Point-Biserial Correlation

A point-biserial correlation coefficient was obtained for each of the continuous variables to determine any significant differences that may exist between the successful and unsuccessful college level beginning shorthand students.[11]

The continuous variables and their respective coefficients and *t* values are listed in Table 10, page 84.

Those coefficients determined to be significant by the point-biserial technique were also determined to be significant by the Student's *t*-test.[12]

These included: spelling, study habits and attitudes, critical thinking, name checking, capacity for status, responsibility, sense of

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[11]The point-biserial technique is used when one of the variables in a correlation problem is a dichotomy; for example, successful versus unsuccessful students.

[12]Other significant differences were found between the successful and unsuccessful college level beginning shorthand students through the use of the chi-square technique.

Table 10. Point-Biserial Correlations Between the Successful and Unsuccessful College Level Beginning Shorthand Students

Variable	Coefficient	t
1. Classroom Achievement Tests		
a. shorthand brief form test	.485	6.585****
b. shorthand theory test	.632	9.683****
c. shorthand reading test	.525	7.324****
2. Wellesley Spelling Scale	.455	6.067****
3. Brown-Holtzman Survey of Study Habits	.344	4.350****
4. Watson-Glaser Critical Thinking Appraisal	.315	3.941****
5. Minnesota Clerical Test		
a. number checking	.120	1.435
b. name checking	.344	4.350****
6. California Psychological Inventory		
a. dominance	.059	.701
b. capacity for status	.197	2.386**
c. sociability	.021	.249
d. social presence	.018	.213
e. self-acceptance	.027	.320
f. sense of well-being	.180	2.172*
g. responsibility	.293	3.638****
h. socialization	.206	2.499**
i. self-control	.186	2.247**
j. tolerance	.147	1.764
k. good impression	.068	.689
l. communality	.238	2.909***
m. achievement via conformance	.266	3.276***
n. achievement via independence	.166	1.998*
o. intellectual efficiency	.264	3.250***
p. psychological-mindedness	.204	2.474**
q. flexibility	-.062	-.737
r. femininity	.103	1.229
7. College grade-point average	.719	11.972****

*significant at .05 level
**significant at .02 level
***significant at .01 level
****significant at .001 level

well-being, socialization, self-control, communality, achievement via conformance, achievement via independence, intellectual efficiency, psychological-mindedness, grade-point average, brief form test, shorthand theory test, and shorthand reading test.

Thus the significant differences between the successful and unsuccessful college level beginning shorthand students as related to the continuous variables cited above were verified by two statistical techniques: the point-biserial correlation method and the Student's t-test.

Part IV

Summary

Thirty-one variables were employed to identify certain similarities or differences that may exist between the successful and unsuccessful college level beginning shorthand students.

Three statistical techniques were used to test the significance of any differences that were identified through a battery of standardized tests, classroom achievement tests, and student information forms and records.

The college level beginning successful and unsuccessful shorthand students were found significantly different at the levels indicated by category or mean score in:

Category (chi-square statistical technique)

1. college major (.01)
2. college English composition grade (.001)

Mean Scores (Student's t-test and point-biserial correlation)

3. shorthand brief form knowledge (.001)

4. shorthand theory knowledge (.001)

5. shorthand reading ability (.001)

6. name checking, according to the Minnesota Clerical Test (.001)

7. study habits and attitudes, according to the Brown-Holtzman Survey of Study Habits and Attitudes (.001)

8. spelling ability, according to the Wellesley Spelling Scale (.001)

9. critical thinking, according to the Watson-Glaser Critical Thinking Appraisal (.001)

10. capacity for status, according to the CPI (.02)

11. sense of well-being, according to the CPI (.05)

12. responsibility, according to the CPI (.001)

13. socialization, according to the CPI (.02)

14. communality, according to the CPI (.01)

15. self-control, according to the CPI (.05)

16. achievement via conformance, according to the CPI (.001)

17. achievement via independence, according to the CPI (.05)

18. intellectual efficiency, according to the CPI (.01)

19. psychological-mindedness, according to the CPI (.02)

20. grade-point average (.001)

No significant differences were found between the successful and unsuccessful college level beginning shorthand students at the .05 level by category or mean score in:

Category (chi-square statistical technique)

1. year in college

2. number of weeks of previous shorthand instruction

Mean Scores (Student's t-test and point-biserial correlation)

3. number checking, according to the Minnesota Clerical Test

4. dominance, according to the CPI

5. sociability, according to the CPI
6. social presence, according to the CPI
7. self-acceptance, according to the CPI
8. tolerance, according to the CPI
9. good impression, according to the CPI
10. flexibility, according to the CPI
11. femininity, according to the CPI

CHAPTER V

ANALYSIS OF THE SUCCESSFUL AND UNSUCCESSFUL COLLEGE LEVEL TRANSCRIPTION STUDENTS

The purpose of this chapter is to present an analysis of the successful and unsuccessful college level transcription students in regard to the selected variables.

The categories successful and unsuccessful were dependent on the final grade received in the transcription classes. Students who received a grade of A or B were classified as successful; students who received a grade of D or E were classified as unsuccessful.

The chapter is divided into four parts: 1) a presentation of the discrete variables using the chi-square technique of analysis; 2) a presentation of the continuous variables using the Student's t-test of analysis; 3) a presentation of the continuous variables using the point-biserial correlation technique of analysis; and 4) a summary of the similarities or differences that may exist between the successful and unsuccessful groups.

The letters S and U have been used in the tables to denote the successful and unsuccessful groups.

Part I

Discrete Variables

This section is concerned with an analysis of eight discrete variables using the chi-square technique. These variables are: 1) college major; 2) year in college; 3) number of weeks of previous shorthand instruction; 4) place of previous shorthand instruction; 5) number of weeks of previous typewriting instruction; 6) number of hours of office work experience involving the use of a typewriter; 7) college English composition grade; and 8) transcription achievement.

College Major - Hypothesis B1

The hypothesis that there is no difference in the college major of the successful and unsuccessful college level transcription students was rejected at the .01 level.

Table 11 shows that 33 percent of the successful transcription students were business education majors in contrast to 11 percent of the unsuccessful group. Sixty-three percent of the successful group were two-year secretarial majors in contrast to 80 percent of the unsuccessful group.

Of the total sample, 22 percent of the transcription students were business education majors; 71 percent were two-year secretarial majors; and 7 percent were four-year secretarial majors.

Table 11 indicates that business education majors are generally more successful in the college transcription class than two-year secretarial majors.

Table 11. Number and Percentage of the Successful and Unsuccessful College Level Transcription Students by College Major

Category	College Major: Business Education N	%	Two-Year Secretarial N	%	Four-Year Secretarial N	%	Total by Category N	%
S	22	33	42	63	3	4	67	51
U	7	11	51	80	6	9	64	49
Total by Major	29	22	93	71	9	7	131	100

x^2: 9.5659; significant at .01 level
df: 2

Year in College - Hypothesis B2

The hypothesis that there is no difference in the year in college of the successful and unsuccessful college level transcription students was not rejected at the .05 level.

Table 12 shows that 51 percent of the total transcription students were college freshmen while 37 percent were college sophomores. The remaining 12 percent were either college juniors or seniors.

Fifty-eight percent of the successful students were freshmen in contrast to 30 percent of the successful group who were sophomores.

While slightly more than half of the students were college freshmen, the particular year in college was not a factor in transcription success.

Number of Weeks of Previous Shorthand Instruction - Hypothesis B3

The hypothesis that there is no difference in the number of weeks of previous shorthand instruction of the successful and unsuccessful

Table 12. Number and Percentage of the Successful and Unsuccessful College Level Transcription Students by Year in College

Category	Year in College: Freshman N	Freshman %	Sophomore N	Sophomore %	Junior-Senior N	Junior-Senior %	Total by Category N	Total by Category %
S	39	58	20	30	8	12	67	51
U	28	44	29	45	7	11	64	49
Total by Yr. in College	67	51	49	37	15	12	131	100

x^2: 3.4588; not significant at .05 level
df: 2

college level transcription students was rejected at the .01 level.

Table 13 shows that 64 percent of the successful students had 68 or more weeks of shorthand instruction (the equivalent of two or more school years) before entering the transcription course; only 33 percent of the unsuccessful students had the same number of weeks of previous shorthand instruction.

Of the total group, 49 percent of the transcription students had the equivalent of two or more years of shorthand instruction before enrolling for the college transcription course; 51 percent of the students had less than the equivalent of two years of shorthand instruction before enrolling for the same course.[1]

These figures indicate that students entering the transcription class with less than two years of previous shorthand instruction seem to be at a disadvantage.

While it is not surprising to experienced shorthand teachers to

[1]Grades received in previous shorthand courses were not considered in this analysis.

find students with as much as 68 weeks of previous shorthand instruction classified as unsuccessful, it is of great concern to both business educators and guidance counselors. Unsuccessful transcription students are generally vocationally incompetent (at least in most stenographic positions).

Table 13. Number and Percentage of the Successful and Unsuccessful College Level Transcription Students by Number of Weeks of Previous Shorthand Instruction

Category	Number of Weeks of Previous Shorthand												Total by Category	
	20-36 weeks		37-52 weeks		53-67 weeks		68-82 weeks		83-97 weeks		98 weeks or more			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
S	7	11	9	13	8	12	26	39	11	16	6	9	67	51
U	15	23	20	31	8	13	10	16	10	16	1	1	64	49
Total by Previous Shorthand	22	17	29	22	16	12	36	28	21	16	7	5	131	100

x^2: 19.7013; significant at .01 level
df: 6

Place of Previous Shorthand Instruction - Hypothesis B4

The hypothesis that there is no difference in the place of previous shorthand instruction of the successful and unsuccessful college level transcription students was not rejected at the .05 level.

Table 14 shows that 70 percent of the successful transcription students received their previous shorthand training at both the high school and college level before enrolling for the college transcription class; 61 percent of the unsuccessful group fell into the same category.

Thirty percent of the unsuccessful transcription students received

their prior shorthand training entirely at the college level in contrast to 14 percent of the successful group.

Of the total sample, 66 percent of the students received their previous shorthand training at both the high school and college level before enrolling for college transcription; 21 percent of the students received all of their training at the college level; and 13 percent of the students went directly into the college transcription class from high school.

While most students received their prior shorthand instruction at both the high school and college level, the particular place the previous instruction was received was not a factor in college level transcription success.

Table 14. Number and Percentage of the Successful and Unsuccessful College Level Transcription Students by Place of Previous Shorthand Instruction

	Place of Previous Shorthand							
Category	All in High School		All in College		Both High School and College		Total by Category	
	N	%	N	%	N	%	N	%
S	11	16	9	14	47	70	67	51
U	6	9	19	30	39	61	64	49
Total by Place of Prev. Shorthand	17	13	28	21	86	66	131	100

x^2: 5.7205; not significant at .05 level
df: 2

Number of Weeks of Previous Typewriting Instruction - Hypothesis B5

The hypothesis that there is no difference in the number of weeks

of previous typewriting instruction of the successful and unsuccessful college level transcription students was not rejected at the .05 level.

Table 15 shows that 71 percent of the successful students and 61 percent of the unsuccessful students had 68 or more weeks of typewriting instruction before entering transcription (the equivalent of two or more school years of typewriting instruction).[2]

Of the total sample, 66 percent of all the students had at least the equivalent of two or more years of typewriting instruction before enrolling for transcription; 34 percent of all the students had less than two years of prior typewriting instruction.

Table 15 indicates that the amount of previous typewriting instruction did not seem to be a significant factor in transcription success at the college level.

Table 15. Number and Percentage of the Successful and Unsuccessful College Level Transcription Students by Number of Weeks of Previous Typewriting Instruction

Category	Weeks of Previous Typewriting Instruction										Total by Category	
	37-52 weeks		53-67 weeks		68-82 weeks		83-97 weeks		98 or more			
	N	%	N		N	%	N	%	N	%	N	%
S	10	15	9	14	20	30	21	31	7	10	67	51
U	15	23	10	16	12	19	19	30	8	12	64	49
Total by Prev. Typewriting Instruction	25	19	19	15	32	24	40	31	15	11	131	100

x^2: 3.1522; not significant at .05 level
df: 4

[2]Grades received or place of previous typewriting instruction was not considered in this analysis.

Office Work Experience - Hypothesis B6

The hypothesis that there is no difference in the number of hours of office work experience involving the use of a typewriter of the successful and unsuccessful college level transcription students was not rejected at the .05 level.

Table 16 shows that 51 percent of the 131 transcription students had no office work experience involving the use of a typewriter; 49 percent of the total group had some office work experience using a typewriter.

Table 17 shows the amount of the office work experience by hours.

The findings of this study indicate that the number of hours of office work experience involving the use of a typewriter did not seem to be a significant factor in transcription success at the college level.

Table 16. Number and Percentage of the Successful and Unsuccessful College Level Transcription Students by Office Work Experience Involving the Use of a Typewriter

Category	Students with work experience		Students without work experience		Total by Category	
	N	%	N	%	N	%
S	36	54	31	46	67	51
U	28	44	36	56	64	49
Total by Office Work Experience	64	49	67	51	131	100

x^2: .93621; not significant at .05 level
df: 1

Table 17. Number and Percentage of the Successful and Unsuccessful College Level Transcription Students and Office Work Experience by Hours Involving the Use of a Typewriter

Category	Hours of Office Work Experience												Total by Category	
	None		Less than 200 hours		200-500 hours		501-800 hours		801-1100 hours		More than 1100 hours			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
S	31	46	10	15	5	8	8	12	6	9	7	10	67	51
U	36	56	3	5	13	20	5	8	3	5	4	6	64	49
Total by Hours of Office Work Experience	67	51	13	10	18	14	13	10	9	7	11	8	131	100

x^2: 5.9236; not significant at .05 level
df: 5

College English Composition Grade - Hypothesis B7

The hypothesis that there is no difference in the college English composition grade of the successful and unsuccessful college level transcription students was rejected at the .01 level.

Table 18 shows that 60 percent of the successful transcription students in contrast to only 27 percent of the unsuccessful students received an English composition grade of A or B.

Thirty-six percent of the successful group received a grade of C while 59 percent of the unsuccessful group received a grade of C in the English composition course.

Of the total transcription group, a college English composition grade of A was received by 10 percent of the students; a grade of B was received by 34 percent of the students; a grade of C was received by 47 percent of the students; and a grade of D was received by 9 percent of the students.

The findings of this study agree with other investigators who concluded that an English composition grade serves as a valuable predictor of shorthand success.

Because transcription has been defined as a fusion of various skills (English skills, typewriting and shorthand skills), these findings further indicated that the college English composition grade significantly discriminated between high and low transcription achievers.

Transcription Achievement - Hypothesis B8

The hypothesis that there is no difference in the transcription achievement of the successful and unsuccessful college level transcription students was composed of four sub-hypotheses:

Table 18. Number and Percentage of the Successful and Unsuccessful College Level Transcription Students by College English Composition Grade

	College English Composition Grade								Total by Category	
	A		B		C		D			
Category	N	%	N	%	N	%	N	%	N	%
S	10	15	30	45	24	36	3	4	67	51
U	3	5	14	22	38	59	9	14	64	49
Total by Eng. Comp. Grade	13	10	44	34	62	47	12	9	131	100

x^2: 15.6882; significant at .01 level
df: 3

B3-1. The hypothesis that there is no difference in transcription achievement according to a score on a letter dictated at 60 words-a-minute and transcribed on a typewriter was not rejected at the .05 level.

B8-2. The hypothesis that there is no difference in transcription achievement according to a score on a letter dictated at 80 words-a-minute and transcribed on a typewriter was rejected at the .001 level.

B8-3. The hypothesis that there is no difference in transcription achievement according to a score on a letter dictated at 100 words-a-minute and transcribed on a typewriter was rejected at the .001 level.

B8-4. The hypothesis that there is no difference in transcription achievement according to a score on a letter dictated at 120 words-a-minute and transcribed on a typewriter was rejected at the .001 level.

One hundred percent of the successful group passed the letters dictated at 60 and 80 words a minute; 90 percent passed the letter dictated at 100 words a minute; 27 percent passed the letter dictated

at 120 words a minute.

Thirty-four percent of the unsuccessful transcription students passed the letter dictated at 80 words a minute; 25 percent passed the letter dictated at 100 words a minute; none of the 64 unsuccessful transcription students passed the letter dictated at 120 words a minute.

Of the entire group, 99 percent passed the letter dictated at 60 words a minute; 73 percent passed the letter dictated at 80 words a minute; 58 percent passed the letter dictated at 100 words a minute; and 14 percent passed the letter dictated at 120 words a minute.

The letters dictated at 80 and 100 words a minute appear to measure certain of the same abilities as those on which the participating instructors based their final grades. The letter dictated at 120 words a minute was apparently too difficult for the entire group as only 27 percent of the successful transcription students passed this particular test.

Table 19. Number and Percentage of the Successful and Unsuccessful College Level Transcription Students and Transcription Achievement

Letter	Successful N: 67				Unsuccessful N: 64				x^2
	Pass	%	Fail	%	Pass	%	Fail	%	
60 words-a-min.	67	100	0	0	63	98	1	2	.00053
80 words-a-min.	67	100	0	0	22	34	42	66	61.7403*
100 words-a-min.	60	90	7	10	16	25	48	75	53.3792*
120 words-a-min.	18	27	49	73	0	0	64	100	17.7306*

df: 1
*significant at .001

Part II

Continuous Variables

The purpose of this section is to analyze by the Student's t-test any significant differences between the successful and unsuccessful college level transcription students in terms of 26 continuous variables.

Eight continuous variables and their mean scores and t values are presented in Table 20. The 18 scales of the California Psychological Inventory and their respective mean scores and t values are presented in Table 21.

Minnesota Clerical Test - Hypotheses B9 and B10

Two hypotheses were stated regarding the subtests of the Minnesota Clerical Test.

B9. The hypothesis that there is no difference in the mean scores of the number checking subtest of the Minnesota Clerical Test of the successful and unsuccessful college level transcription students was not rejected at the .05 level.

B10. The hypothesis that there is no difference in the mean scores of the name checking subtest of the Minnesota Clerical Test of the successful and unsuccessful college level transcription students was not rejected at the .05 level.

Mean scores of each group and the t values are listed in Table 20, page 101.

The mean scores of both the successful and unsuccessful groups fell into the sixtieth percentile in number checking when compared with inexperienced female typists and stenographers hired at banks

Table 20. t-test Analysis of the Differences Between the Means of the Successful and Unsuccessful College Level Transcription Students and Eight Continuous Variables

Variable	Mean Scores S N: 67	Mean Scores U N: 64	Standard Dev. S	Standard Dev. U	t
1. Minnesota Clerical Test					
a. number checking	137.58	133.23	32.04	24.52	.86
b. name checking	149.91	137.75	56.00	24.09	1.60
2. Brown-Holtzman Survey of Study Habits and Attitudes	32.14	30.14	9.88	9.33	1.19
3. Wellesley Spelling Scale	39.38	34.35	3.73	5.39	6.23***
4. Watson-Glaser Critical Thinking Appraisal	70.22	65.96	8.22	9.83	2.69**
5. College Grade-Point Average	283.65	197.51	46.69	59.05	9.28***
6. Typewriting Achievement					
a. accuracy	3.98	5.54	2.34	3.79	-1.99*
b. speed	69.88	62.90	8.16	11.00	4.13***

*significant at .05 level
**significant at .01 level
***significant at .001 level

(N: 300; mean: 129).[3] The successful transcription students, with a mean score of 149.91 on the name checking test, fell into the seventieth percentile of this same normative group; the unsuccessful students, with a mean score of 137.75, fell into the sixtieth percentile.

[3] MCT Manual, p. 6.

The findings of this study indicate that a significant relationship did not exist between transcription success and the two subtests of the Minnesota Clerical Test.

Brown-Holtzman Survey of Study Habits and Attitudes - Hypothesis B11

The hypothesis that there is no difference in the mean scores of the Brown-Holtzman Survey of Study Habits and Attitudes of the successful and unsuccessful college level transcription students was not rejected at the .05 level.

Mean scores of each group and t values are listed in Table 20, page 101.

The successful transcription students, with a mean score of 32.14, fell into the fiftieth percentile of college women norms (N: 1446; mean: 31.6). The unsuccessful students, with a mean score of 30.14, fell into the fortieth percentile of the college women norms. These same percentiles apply to high school female norms as well (N: 1430; mean: 31.1).[4]

The findings of this study indicate that study habits and attitudes, as measured by the Brown-Holtzman Survey of Study Habits and Attitudes, did not seem to be a significant factor in transcription success at the college level.

The Wellesley Spelling Scale - Hypothesis B12

The hypothesis that there is no difference in the mean scores of the Wellesley Spelling Scale of the successful and unsuccessful college

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[4] SSHA Manual, p. 5.

level transcription students was rejected at the .001 level.

Mean scores of each group and the t values are listed in Table 20, page 101.

The successful transcription group, with a mean score of 39.38, fell into the seventieth percentile of the Grade 13 norms (N: 1933, both men and women included; mean not listed).[5] The unsuccessful transcription students, with a mean score of 34.35, fell into the fiftieth percentile of the same normative group.

The findings of this study indicate that spelling ability significantly discriminates between the high and low college transcription achievers.

The Watson-Glaser Critical Thinking Appraisal - Hypothesis B13

The hypothesis that there is no difference in the mean scores of the Watson-Glaser Critical Thinking Appraisal of the successful and unsuccessful college level transcription students was rejected at the .01 level.

The successful transcription group with a mean score of 70.22 (Table 20, page 101), fell into the seventy-second percentile of a Grade 12 normative group (N: 1800, both men and women included; mean: 65.6).[6] The unsuccessful transcription students, with a mean score of 65.96, fell into the fifty-fourth percentile of this normative group.

When compared with the norms of 5,297 liberal arts college freshmen men and women (Mean: 70.2), the successful group fell into the

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[5] Wellesley Spelling Scale Manual, p. 12.

[6] Watson-Glaser Manual, p. 5.

forty-fifth percentile and the unsuccessful group fell into the thirtieth percentile.[7]

The findings of this study indicate that a significant relationship existed between transcription success on the college level and critical thinking, as measured by the Watson-Glaser Critical Thinking Appraisal.

California Psychological Inventory (CPI) - Hypotheses B14 - B31

Eighteen hypotheses were stated that there were no differences between the successful and unsuccessful college level transcription students in regard to each of the scales of the California Psychological Inventory.

The eighteen hypotheses were not rejected at the .05 level; the CPI Scales and their respective *t* values are listed in Table 21, page 105.

The raw mean scores of the transcription students in this study and those of high school and college female subjects are listed in Appendix L. Examination revealed that the raw scores of the college students in this investigation approximate those of the high school sample cited in the CPI Manual.[8]

The findings of this study indicate that the college transcription students in this study were a homogenous group as characterized by the 18 Scales of the California Psychological Inventory.

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[7] Ibid.

[8] CPI Manual, p. 35.

Table 21. t-test Analysis of the Differences Between the Means of the Successful and Unsuccessful College Level Transcription Students on the Eighteen Scales of the California Psychological Inventory

Variable	Mean Scores		Standard Dev.		t
	S N: 67	U N: 64	S	U	
Dominance	23.22	24.04	6.19	6.10	-.76
Capacity for status	18.44	17.51	6.81	4.41	.92
Sociability	22.07	23.10	5.26	4.67	-1.18
Social presence	32.41	33.96	6.20	5.35	-1.52
Self-acceptance	20.79	21.34	3.67	3.70	-.85
Sense of well-being	33.86	33.96	6.08	5.79	-.09
Responsibility	30.13	29.32	4.00	4.33	1.10
Socialization	38.52	39.21	5.49	4.59	-.78
Self-control	26.86	26.87	7.57	7.34	0.00
Tolerance	19.71	19.59	5.07	5.77	.12
Good impression	13.64	14.87	5.61	6.06	-1.20
Communality	26.49	25.92	1.92	2.50	1.46
Achievement via conformance	25.05	24.90	5.11	4.86	.17
Achievement via independence	18.37	17.79	3.61	4.05	.85
Intellectual efficiency	34.70	34.95	5.78	5.21	-.26
Psychological-mindedness	8.88	9.03	2.78	2.78	-.30
Flexibility	9 38	8.87	3.18	3.64	.85
Femininity	23.80	23.73	3.37	3.30	.12

No significant differences at the .05 level were found between the successful and unsuccessful transcription students and the 18 scales of the California Psychological Inventory.

Grade-Point Average - Hypothesis B32

The hypothesis that there is no difference in the mean scores of the college grade-point average of the successful and unsuccessful college level transcription students was rejected at the .001 level.

Mean scores of each group and the t values are listed in Table 20, page 101.

The findings of this study agree with other investigators who concluded that average grades were one of the most useful factors in predicting shorthand success.

Typewriting Achievement - Hypotheses B33 and B34

Two hypotheses were stated regarding the typewriting achievement of the successful and unsuccessful transcription students.

B33. The hypothesis that there is no difference in the mean scores in typewriting accuracy (according to a three-minute straight-copy typing test) of the successful and unsuccessful college level transcription students was rejected at the .05 level.

B34. The hypothesis that there is no difference in the mean scores in typewriting speed (according to a three-minute straight-copy typing test) of the successful and unsuccessful college level transcription students was rejected at the .001 level.

The mean scores of each group according to the two typewriting variables and the t values are listed in Table 20, page 101.

Transcription is viewed as a fusion of skills: shorthand ability, typewriting achievement, and the various English skills. The findings of this study indicate that both typewriting accuracy and speed were significant factors in transcription success at the college level.

Part III

Point-Biserial Correlation

A point-biserial correlation coefficient was obtained for each of the continuous variables to determine any significant differences that may exist between the successful and unsuccessful college level transcription students.[9]

The continuous variables and their respective coefficients and *t* values are listed in Table 22.

Those coefficients determined to be significant by the point-biserial technique were also determined to be significant by the Student's *t*-test.[10]

These included: spelling ability, critical thinking, college grade-point average, and typewriting accuracy and speed.

Thus the significant differences between the successful and unsuccessful college level transcription students as related to the continuous variables cited above were verified by two statistical techniques: the point-biserial correlation method and the Student's *t*-test.

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[9]The point-biserial technique is used when one of the variables in a correlation problem is a dichotomy; for example, successful versus unsuccessful students.

[10]Other significant differences were found between the successful and unsuccessful college level transcription students through the use of the chi-square technique.

Table 22. Point-Biserial Correlations Between the Successful and Unsuccessful College Level Transcription Students

Variable	Coefficient	t
1. Wellesley Spelling Scale	.479	6.197****
2. Brown-Holtzman Survey of Study Habits	.104	1.187
3. Watson-Glaser Critical Thinking Appraisal	.229	2.671***
4. Minnesota Clerical Test		
a. number checking	.076	.865
b. name checking	.139	1.594
5. California Psychological Inventory		
a. dominance	-.067	-.762
b. capacity for status	.080	.911
c. sociability	-.103	-1.176
d. social presence	-.132	-1.512
e. self-acceptance	-.075	-.854
f. sense of well-being	-.008	-.090
g. responsibility	.096	1.095
h. socialization	-.068	-.744
i. self-control	.000	0.000
j. tolerance	.011	.124
k. good impression	-.105	-1.199
l. communality	.127	1.454
m. achievement via conformance	.015	.170
n. achievement via independence	.075	.854
o. intellectual efficiency	-.022	-.249
p. psychological-mindedness	-.027	-.306
q. flexibility	.075	.854
r. femininity	.010	.113
6. College grade-point average	.630	9.213****
7. Typewriting Achievement		
a. accuracy	.242	-2.832***
b. typewriting speed	.340	4.106****

***significant at .01 level
****significant at .001 level

Part IV

Summary

Thirty-four variables were employed to identify certain similarities or differences that may exist between the successful and unsuccessful college level transcription students.

Three statistical techniques were used to test the significance of any differences that were identified through a battery of standardized tests, classroom achievement tests, and student information forms and records.

The college level successful and unsuccessful transcription students were found significantly different at the levels indicated by category or mean scores in:

Category (chi-square statistical technique)

1. college major (.01)
2. number of weeks of previous shorthand instruction (.01)
3. college English composition grade (.01)
4. transcription achievement, according to three letters dictated at 80, 100, and 120 words a minute and transcribed on a typewriter (.001)

Mean Scores (Student's t-test and point-biserial correlation)

5. spelling,according to the Wellesley Spelling Scale (.001)
6. critical thinking, according to the Watson-Glaser Critical Thinking Appraisal (.01)
7. college grade-point average (.001)
8. typewriting accuracy, according to a three-minute straight-copy typing test (.05)
9. typewriting speed, according to a three-minute straight-copy typing test (.001)

No significant differences were found between the successful and unsuccessful college level transcription students at the .05 level by category or mean score in:

Category (chi-square statistical technique)

1. year in college
2. place of previous shorthand instruction
3. number of weeks of previous typewriting instruction
4. number of hours of office work experience involving the use of a typewriter
5. transcription achievement, according to a letter dictated at 60 words a minute and transcribed on a typewriter

Mean Scores (Student's t-test and point-biserial correlation)

6. number checking, according to the Minnesota Clerical Test
7. name checking, according to the Minnesota Clerical Test
8. study habits and attitudes, according to the Brown-Holtzman Survey of Study Habits and Attitudes
9. dominance, according to the CPI
10. capacity for status, according to the CPI
11. sociability, according to the CPI
12. social presence, according to the CPI
13. self-acceptance, according to the CPI
14. sense of well-being, according to the CPI
15. responsibility, according to the CPI
16. socialization, according to the CPI
17. self-control, according to the CPI
18. tolerance, according to the CPI
19. good impression, according to the CPI
20. communality, according to the CPI

21. achievement via conformance, according to the CPI
22. achievement via independence, according to the CPI
23. intellectual efficiency, according to the CPI
24. psychological-mindedness, according to the CPI
25. flexibility, according to the CPI
26. femininity, according to the CPI

CHAPTER VI

ANALYSIS OF THE SIMILARITIES AND DIFFERENCES OF THE SUCCESSFUL AND UNSUCCESSFUL COLLEGE LEVEL BEGINNING SHORTHAND AND TRANSCRIPTION STUDENTS

The purpose of this chapter is to present an analysis of the similarities and differences that may exist between the two instructional levels.

Although direct comparisons between the two instructional levels cannot be made, certain conclusions may be drawn regarding the commonalty that existed between the successful and unsuccessful beginning shorthand and transcription students.

Table 23 lists the mean scores of the successful and unsuccessful students in regard to the 24 continuous variables employed at both instructional levels using the Student's t-test and point-biserial correlation method. The four discrete variables employed at both instructional levels using the chi-square technique are listed in Table 24.[1]

Continuous Variables

The Minnesota Clerical Test. The Minnesota Clerical Test, a test of clerical speed and comprehension, consists of two subtests: number

[1]The variables employed at one level only will not be discussed in this chapter.

checking and name checking.

No significant differences at the .05 level were found in the mean scores of the number checking test of the successful and unsuccessful students at either instructional level.

A significant difference at the .001 level was found in the mean scores in the name checking test of the successful and unsuccessful beginning shorthand students. However, there was no significant difference at the .05 level in the mean scores of the name checking test of the successful and unsuccessful transcription students.

Brown-Holtzman Survey of Study Habits and Attitudes. A significant difference at the .001 level was found in the mean scores of the Brown-Holtzman Survey of Study Habits and Attitudes of the successful and unsuccessful beginning shorthand students; however, no significant differences were found at the .05 level in the mean scores of the successful and unsuccessful transcription students.

The findings of this study indicated that study habits and attitudes, as measured by this standardized instrument, did not seem to be a significant factor in transcription success.

Wellesley Spelling Scale. Significant differences at the .001 level were found in the mean scores of the Wellesley Spelling Scale of the successful and unsuccessful students at both instructional levels.

Watson-Glaser Critical Thinking Appraisal. Significant differences (beginning shorthand: .001 level and transcription: .01 level) were found in the mean scores of the Watson-Glaser Critical Thinking Appraisal of the successful and unsuccessful students at both instructional levels.

California Psychological Inventory. The findings of this study

Table 23. A Comparison of the Mean Scores of the Successful and Unsuccessful Students and Twenty-four Variables Employed in the College Level Beginning Shorthand Classes and Transcription Classes

Variable	Mean Scores Beginning Shorthand Students		Mean Scores Transcription Students	
	S	U	S	U
	N: 82	N: 61	N: 67	N: 64
1. Minn. Clerical Test				
a. number checking	132.20	126.03	137.58	133.23
b. name checking	143.42****	123.63	149.91	137.75
2. Brown-Holtaman Survey of Study Habits and Attitudes	31.24****	24.01	32.14	30.14
3. Wellesley Spell. Scale	36.25****	30.27	39.38****	34.35
4. Watson-Glaser Critical Thinking Appraisal	67.95****	61.93	70.22***	65.96
5. Calif. Psychological Inventory				
a. dominance	24.10	23.36	23.22	24.04
b. cap. for status	18.39**	16.80	18.44	17.51
c. sociability	23.24	23.01	22.07	23.10
d. social presence	34.15	33.91	32.41	33.96
e. self-acceptance	21.12	20.90	20.79	21.34
f. sense of well-being	33.80*	31.59	33.86	33.96
g. responsibility	29.90****	26.80	30.13	29.32
h. socialization	37.41**	34.60	38.52	39.21
i. self-control	26.07*	22.90	26.86	26.87
j. tolerance	19.74	18.09	19.71	19.59
k. good impression	14.12	13.40	13.64	14.87
l. communality	25.90***	24.54	26.49	25.92
m. ach. via conform.	24.79****	21.93	25.05	24.90
n. ach. via independ.	18.48*	17.11	18.37	17.79
o. intell. efficiency	35.69***	31.90	34.70	34.95
p. psy. mindedness	9.21**	8.16	8.88	9.03
q. flexibility	9.82	10.31	9.38	8.87
r. femininity	23.01	22.26	23.80	23.73
6. Grade-Point Average	256.93****	149.78	283.65****	197.51

*significant at .05 level
**significant at .02 level
***significant at .01 level
****significant at .001 level

indicated that the transcription students were a homogenous group as characterized by the 18 scales of the CPI.

The ten scales of the CPI that significantly discriminated between the successful and unsuccessful beginning shorthand students were generally indicative of those characteristics usually necessary for successful classroom behavior. Those scales which identified the similarities between the two beginning achievement groups were generally indicative of social behavior and adjustment.

College Grade-Point Average. Significant differences at the .001 level were found in the mean scores of the college grade-point average of the successful and unsuccessful students at both instructional levels.

The findings were in agreement with other research studies that concluded that average grades were one of the most useful factors in predicting shorthand success.

Discrete Variables

College Major. Significant differences were found in the college major at the .01 level of the successful and unsuccessful students at both instructional levels.

The findings of this study indicated that business education majors were generally more successful than two-year secretarial majors.

Year in College. No significant differences at the .05 level were found in the year in college of the successful and unsuccessful students at either instruction level.

Number of Weeks of Previous Shorthand Instruction. A significant difference at the .01 level was found in the number of weeks of

previous shorthand instruction of the successful and unsuccessful transcription students. However, there was no significant difference at the .05 level in number of weeks of previous shorthand instruction and successful and unsuccessful beginning shorthand students.

The findings indicated that students entering the transcription class with less than two years of previous shorthand instruction seemed to be at a disadvantage. On the other hand, prior shorthand instruction did not seem to be a significant factor in beginning shorthand success.

Table 24. A Comparison of the Chi-square Results of the Successful and Unsuccessful Students and Four Discrete Variables Employed in the College Level Beginning Shorthand Classes and Transcription Classes

Variable	Beginning Shorthand Students Level of Significance Between the S and U Groups	Transcription Students Level of Significance Between the S and U Groups
1. College major	.01	.01
2. Year in college	Not sign. at .05	Not sign. at .05
3. Number of weeks of previous shorthand instruction	Not sign. at .05	.01
4. College English composition grade	.001	.01

College English Composition Grade. Significant differences (beginning shorthand: .001 level; transcription: .01 level) were found in the college English composition grades of the successful and unsuccessful students at both instructional levels.

The findings agreed with other investigators who reported that

an English composition grade is a useful predictor of shorthand success.

Summary

A number of significant differences were identified between the successful and unsuccessful college level beginning shorthand students as related to the variables employed in this study. There were few significant differences between the college level successful and unsuccessful transcription students, however. With few exceptions, successful achievement in transcription was apparently based on factors directly related to the transcription process and classroom achievement.

CHAPTER VII

SUMMARY, FINDINGS, AND RECOMMENDATIONS

This chapter is divided into four parts. Part I includes a summary of the problem and the procedures followed in this investigation; Part II is concerned with the similarities and differences that may exist between the successful and unsuccessful college level beginning shorthand students; Part III is concerned with the similarities and differences that exist between the successful and unsuccessful college level transcription students; Part IV presents a series of recommendations for further studies.

Parts II and III are divided into two sections: Section I presents a list of similarities and differences that pertain to the instructional level under discussion; Section II includes a discussion of certain of the findings and implications for guidance counselors and business education teachers.

Part I

Summary of the Problem and Procedures

The problem was to identify the similarities or differences according to selected variables that may exist between the successful and unsuccessful college level beginning shorthand students and the successful and unsuccessful college level transcription students.

The students in this study were tested and/or analyzed in terms of:

1. certain psychological characteristics
2. clerical speed and comprehension
3. critical thinking
4. spelling ability
5. study habits and attitudes
6. number of weeks of previous shorthand and typewriting instruction
7. place of previous shorthand instruction
8. college major
9. college grade-point average
10. year in college
11. number of hours of office work experience involving the use of a typewriter
12. college English composition grade
13. skill achievement at the two instructional levels

Seven public-supported Michigan institutions offering secretarial and/or business education programs participated in this study. These included: three junior colleges, one four-year college, and three universities.

The subjects of this study were female students enrolled in nine beginning shorthand classes and nine transcription classes during the winter and spring school terms of 1967.

Students who received a grade of A or B were classified as successful; students who received a grade of D or E were classified as unsuccessful. A total of 82 successful and 61 unsuccessful beginning shorthand students were identified; a total of 67 successful and

64 unsuccessful transcription students were identified.

Three statistical techniques were used to test the significance of any differences on the selected variables that were identified between the successful and the unsuccessful students. The Student's t-test and the point-biserial correlation technique were used to analyze the continuous variables; the chi-square technique was used to analyze the discrete variables.

Part II

Section I

The College Level Beginning Shorthand Students

Thirty-one variables were employed to identify certain similarities or differences that may exist between the successful and unsuccessful college level beginning shorthand students.

The findings are based on high and low beginning shorthand achievers; moreover, the findings are related to group rather than individual characteristics.

The successful and unsuccessful college level beginning shorthand students were found significantly different at the levels indicated by category or mean score in:

Category (chi-square statistical technique)

1. college major (.01)
2. college English composition grade (.001)

Mean Scores (Student's t-test and point-biserial correlation)

3. shorthand brief form knowledge (.001)
4. shorthand theory knowledge (.001)

5. shorthand reading ability (.001)

6. name checking, according to the Minnesota Clerical Test (.001)

7. study habits and attitudes, according to the Brown-Holtzman Survey of Study Habits and Attitudes (.001)

8. spelling ability, according to the Wellesley Spelling Scale (.001)

9. critical thinking, according to the Watson-Glaser Critical Thinking Appraisal (.001)

10. capacity for status, according to the CPI (.02)

11. sense of well-being, according to the CPI (.05)

12. responsibility, according to the CPI (.001)

13. socialization, according to the CPI (.02)

14. communality, according to the CPI (.01)

15. self-control, according to the CPI (.05)

16. achievement via conformance, according to the CPI (.001)

17. achievement via independence, according to the CPI (.05)

18. intellectual efficiency, according to the CPI (.01)

19. psychological-mindedness, according to the CPI (.02)

20. college grade-point average (.001)

No significant differences were found between the successful and unsuccessful college level beginning shorthand students at the .05 level in:

Category (chi-square statistical technique)

1. year in college

2. number of weeks of previous shorthand instruction

Mean Scores (Student's t-test and point-biserial correlation)

3. number checking, according to the Minnesota Clerical Test

4. dominance, according to the CPI

5. sociability, according to the CPI

6. social presence, according to the CPI
7. self-acceptance, according to the CPI
8. tolerance, according to the CPI
9. good impression, according to the CPI
10. flexibility, according to the CPI
11. femininity, according to the CPI

Section II

Implications for Guidance Counselors and Business Education Teachers

The purpose of this investigation was to provide information useful for guidance counselors and business educators who are responsible for advising college level beginning shorthand students in course and occupational planning. The need for this information is apparent as past research indicated that a large number of students failed or dropped shorthand. Of the 224 students enrolled in the beginning shorthand classes at the seven participating institutions during this investigation, 27 percent of them were classified as "unsuccessful" by their teachers; 36 percent of them were classifed as "average" by their teachers; and 37 percent of them were considered "successful" by their teachers.

A secondary purpose of this investigation was to provide data that may be useful in identifying prognostic factors for research or counseling purposes.

Past research findings have generally agreed that English composition grades and overall grade-point average are among the best predictors of beginning shorthand success. While these factors did

significantly distinguish the successful and unsuccessful beginning shorthand students in the present study, they are not particularly useful on the college level. A large percentage of the students enroll in beginning shorthand immediately upon entering college--before an English composition grade or college grade-point average becomes available for diagnostic or predictive purposes. Thus, other guidance factors are needed.

English Skills

Because the mean scores on the two variables related to English skills significantly discriminated between the successful and unsuccessful beginning shorthand students (English composition grade and spelling ability), these factors deserve the attention of both the guidance counselor and the shorthand teacher. Because past research indicates that high school English compostion grades are useful predictors of shorthand success, collegiate guidance counselors should consider the use of this high school grade when college English grades are not available for counseling purposes.

A standardized English usage test may be useful in discovering deficiencies in English skills before the students enroll in beginning shorthand. Students with these deficiencies should be required to enroll for remedial work before entering or while enrolled in the beginning shorthand class.

A standardized spelling test should be administered to all students enrolled in beginning shorthand. Students who fall below appropriate norms[1] should be encouraged or required to seek special

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[1]In the present investigation, for example, the unsuccessful

help. Additional research should be conducted to establish norms or scales specifically useful for counseling students interested in beginning shorthand.

Beginning shorthand teachers may also want to consider a certain amount of formal spelling instruction as an integral part of the class assignments.

Critical Thinking

Critical thinking is viewed as a composite of attitudes, traits, knowledges and skills.[2] The findings of this investigation indicated that a significant relationship existed between beginning shorthand success and critical thinking.

Because careful and analytical thinking is an important facet in the career of the executive secretary or business teacher, a critical thinking measurement may be a useful tool to use for occupational planning and counseling.

A critical thinking appraisal instrument may also be a useful prognosticator of beginning shorthand success.[3] Additional research

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students fell below the thirtieth percentile of the Grade 13 norms of the Wellesley Spelling Scale. The successful students, on the other hand, fell into the sixtieth percentile.

[2]The Watson-Glaser Critical Thinking Appraisal used to measure critical thinking in this study consists of five subtests designed to measure different, though interdependent aspects of critical thinking: inference, recognition of assumptions, deduction, interpretation, evaluation of arguments. These subtests are described on page 49.

[3]In the present investigation, for example, the successful beginning shorthand students fell into the sixtieth percentile of a Grade 12 normative group cited in the Watson-Glaser Critical Thinking Appraisal Manual; the unsuccessful group fell into the thirty-eighth percentile of this same normative group.

should be conducted to establish norms or scales specifically useful in counseling students interested in enrolling for beginning shorthand.

Classroom Achievement

Because a significant relationship existed between knowledge of shorthand theory and brief forms and success in beginning shorthand, continued emphasis should be placed on these factors throughout the beginning shorthand course.

Study Habits and Attitudes

Good study habits and attitudes have long been recognized by shorthand teachers as an important factor in beginning shorthand success. The findings of this investigation confirm this belief.

Students with poor study habits and attitudes should be identified prior to or upon entering the beginning shorthand class. Those identified as having poor study habits and attitudes[4] should receive special counseling and perhaps remedial work. In addition, special teaching techniques should be developed to overcome those poor study habits and attitudes as they relate to shorthand success.

The Brown-Holtzman Survey of Study Habits and Attitudes may be a useful prognosticator of beginning shorthand success. Additional research should be conducted to establish norms or scales specifically useful in counseling students interested in enrolling for beginning shorthand.

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[4]In the present investigation, for example, the successful beginning shorthand students fell into the fiftieth percentile of the college women norms cited in the Brown-Holtzman Survey of Study Habits and Attitudes Test Manual. The unsuccessful group, on the other hand, fell into the twentieth percentile.

Previous Shorthand Instruction

Collegiate shorthand teachers are concerned about students who wish to repeat the beginning shorthand course. It is frequently stated that these students are simply trying to get an "easy grade."

Although most of the beginning shorthand students in this study had no prior shorthand instruction, previous shorthand instruction was not a factor in successful beginning shorthand achievement.

Greater use should be made of placement tests for guiding students in selecting the most appropriate shorthand course.

Clerical Speed and Comprehension

The Minnesota Clerical Tests, a test of clerical speed and comprehension, consists of two subtests: number checking and name checking.

A significant relationship existed between the name checking subtest and success in beginning shorthand.

The name checking subtest of the Minnesota Clerical Test may be a useful prognosticator of beginning shorthand success.[5] Additional research should be conducted to establish norms or scales specifically useful in counseling students interested in enrolling for beginning shorthand.

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[5]In this investigation, for example, the successful beginning shorthand students fell into the seventieth percentile of one normative group cited in the Minnesota Clerical Test Manual; the unsuccessful group, on the other hand, fell into the fortieth percentile.

There were no significant differences between the two achievement groups and the number checking subtest of the Minnesota Clerical Test.

Psychological Characteristics

The ten scales of the California Psychological Inventory that significantly discriminated between the successful and unsuccessful college level beginning shorthand students were generally indicative of those characteristics usually necessary for successful classroom behavior. Those scales which identified the similarities between the two achievement groups were generally indicative of social behavior and adjustment.

Because all of the scales in the CPI Category "Measures of Achievement Potential and Intellectual Efficiency" significantly discriminated between the successful and unsuccessful beginning shorthand students, guidance counselors may wish to concentrate their efforts on this one broad category.

Business teachers should recognize the interdependency of the scales as they relate to individual achievers and make use of the Inventory only with the aid of a trained counselor or as a confidential research device.

Part III

Section I

The College Level Transcription Students

Thirty-four variables were employed to identify certain similarities or differences that may exist between the successful and unsuccessful college level transcription students.

The findings of this study are based on high and low transcription achievers; moreover, the findings relate to group rather than

individual characteristics.

The college level successful and unsuccessful transcription students were found significantly different at the levels indicated by category or mean scores in:

Category (chi-square statistical technique)

1. college major (.01)
2. number of weeks of previous shorthand instruction (.01)
3. college English composition grade (.01)
4. transcription achievement, according to three letters dictated at 80, 100, and 120 words a minute and transcribed on a typewriter (.001)

Mean Scores (Student's t-test and point-biserial correlation)

5. spelling, according to the Wellesley Spelling Scale (.001)
6. critical thinking, according to the Watson-Glaser Critical Thinking Appraisal (.01)
7. college grade-point average (.001)
8. typewriting accuracy, according to a three-minute straight-copy typing test (.05)
9. typewriting speed, according to a three-minute straight-copy typing test (.001)

No significant differences were found between the successful and unsuccessful college level transcription students at the .05 level of significance in the following characteristics:

Category (chi-square statistical technique)

1. year in college
2. place of previous shorthand instruction
3. number of weeks of previous typewriting instruction
4. number of hours of office work experience involving the use of a typewriter
5. transcription achievement, according to a letter dictated at 60 words a minute and transcribed on a typewriter

Mean Scores (Student's t-test and point-biserial correlation)

6. number checking, according to the Minnesota Clerical Test
7. name checking, according to the Minnesota Clerical Test
8. study habits and attitudes, according to the Brown-Holtzman Survey of Study Habits and Attitudes
9. dominance, according to the CPI
10. capacity for status, according to the CPI
11. sociability, according to the CPI
12. social presence, according to the CPI
13. self-acceptance, according to the CPI
14. sense of well-being, according to the CPI
15. responsibility, according to the CPI
16. socialization, according to the CPI
17. self-control, according to the CPI
18. tolerance, according to the CPI
19. good impression, according to the CPI
20. communality, according to the CPI
21. achievement via conformance, according to the CPI
22. achievement via independence, according to the CPI
23. intellectual efficiency, according to the CPI
24. psychological-mindedness, according to the CPI
25. flexibility, according to the CPI
26. femininity, according to the CPI

Section II

Implications for Guidance Counselors and Business Education Teachers

The purpose of this investigation was to provide information

useful for guidance counselors and business educators who are responsible for advising students in course and occupational planning.

The need for this information is apparent as past research indicated that a large number of students who complete a shorthand sequence are not capable of producing vocationally acceptable letters. Of the 207 students enrolled in the transcription classes at the sever participating institutions, 31 percent of them were classified as "unsuccessful" by their transcription teachers; 32 percent of them were classified as "successful" by their transcription teachers; and 37 percent of them were classified as "average" by their transcription teachers.

While there were many significant differences between the successful and unsuccessful college level beginning shorthand students as related to the variables employed in this study, there were fewer significant differences between the college level successful and unsuccessful transcription students.

Unlike the beginning shorthand students, the significant differences identified between the successful and unsuccessful transcription students apparently were directly related to the transcription process. With only a few exceptions, successful achievement in transcription was based on factors directly related to classroom achievement.

Successful transcription achievement was significantly related to achievement in English, shorthand, and typewriting skills.

In general, successful transcription students were able to write and transcribe shorthand at vocationally acceptable speeds; they had significantly higher mean scores on the college English composition grade and a standardized spelling test; the successful and unsuccessful

groups were significantly different in typewriting accuracy and speed.

Past research findings have generally agreed that English composition grades and overall grade-point average were among the best predictors of shorthand success. While these factors did significantly distinguish the successful and unsuccessful transcription students in the present investigation, they are not generally useful on the college level. Many students enroll in the transcription class immediately upon entering college; therefore, other guidance factors are needed.

English Skills

Because two variables related to English skills produced significant differences in the mean scores of the successful and unsuccessful transcription students (English composition grade and spelling ability), these factors deserve the attention of both the guidance counselor and the transcription teacher. Because past research indicates that high school English composition grades are useful predictors of shorthand success, collegiate guidance counselors should consider the use of this high school grade when college English grades are not available for counseling purposes.

As an English composition grade may or may not be available for guidance purposes on the college level, a standardized English usage test should be used in discovering certain deficiencies in English skills. Students with these deficiencies should be required to enroll for remedial work before entering or while enrolled in the transcription class.

Spelling proficiency is also a necessity for vocational competency. A standardized spelling test should be administered to all students

enrolled in the transcription course. Students who fall below certain norms[6] should be encouraged to seek special help.

Research should be conducted to establish norms or scales specifically useful in counseling students interested in enrolling in the transcription class.

Transcription teachers should also consider a certain amount of formal spelling instruction as an integral part of the transcription course.

Critical Thinking

Critical thinking is viewed as a composite of attitudes, traits, knowledges and skills.[7] The findings of this investigation indicated that a significant relationship existed between transcription success and critical thinking.

Because careful and analytical thinking is an important facet in the career of the executive secretary or business teacher, a critical thinking measurement may be a useful tool for occupational planning and counseling. A critical thinking instrument may also be a useful prognosticator of transcription success.[8]

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[6]In the present investigation, for example, the unsuccessful students fell into the fiftieth percentile of the Grade 13 norms of the Wellesley Spelling Scale. The successful students, on the other hand, fell into the seventieth percentile.

[7]The Watson-Glaser Critical Thinking Appraisal, used to measure critical thinking in this investigation, consists of five subtests designed to measure different, though interdependent, aspects of critical thinking: inference, recognition of assumptions, deduction, interpretation, evaluation of arguments. These subtests are described on page 49.

[8]In the present investigation, for example, the successful transcription students fell into the seventy-second percentile of a

Research should be conducted to establish norms or scales specifically useful in counseling students interested in enrolling in the transcription class.

Research should also be conducted in developing teaching methods that may develop and strengthen the critical thinking abilities of the transcription students.

Office Work Experience

Fifty-one percent of all the transcription students in this study had no office work experience of any type; 10 percent of all of the transcription students had less than 200 hours of actual office work experience involving the use of a typewriter.

Shorthand teachers should not assume that transcription students recognize "world-of-work" responsibilities and the expectations and obligations of the college-trained secretary. In addition, future office education teachers may not be aware of many office routines and job requirements.

Number of Weeks of Previous Shorthand Instruction

Forty-nine percent of all the transcription students in this study had the equivalent of two or more years of shorthand instruction before enrolling for the college transcription course (21 percent of them had 83 weeks or more of previous shorthand instruction).

While it is not surprising to experienced shorthand teachers to find students with as much as the equivalent of two years of instruction

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Grade 12 normative group cited in the Watson-Glaser Critical Thinking Appraisal Manual; the unsuccessful group, on the other hand, fell into the fifty-fourth percentile of this normative group.

classified as "unsuccessful" (33 percent of the unsuccessful group had this much training), it is of great concern to both business teachers and guidance counselors. Unsuccessful transcription students are generally vocationally incompetent, at least in most stenographic positions.

Students enrolling for transcription with less than two years of previous shorthand training seem to be at a disadvantage. Yet, those students who take all of their shorthand training at the college level may come to the transcription course with only two semester (or the equivalent) of preparation.

It seems paramount that students receive careful guidance in selecting the most appropriate shorthand course to elect. Greater use should be made of shorthand placement and proficiency examinations.

Number of Weeks of Previous Typewriting Instruction

The number of weeks of previous typewriting instruction was not a significant factor in successful transcription achievement. There were, however, significant differences in the mean scores of the typewriting accuracy and speed of the successful and unsuccessful transcription students.

Seventy-two percent of the successful students and 61 percent of the unsuccessful students had the equivalent of two years of typewriting instruction before entering the transcription class.

Because the amount of typewriting instruction was not a significant factor in successful transcription achievement, business educators may wish to re-evaluate the typewriting requirements and number of typewriting courses offered at the college level. Many students may

be taking more typewriting than is necessary (though the quality of the class work was not analyzed).

Business education departments should consider greater use of typewriting placement and proficiency examinations, allowing proficient students to make more valuable use of instructional time.

Part IV

Recommendations for Further Study

The following recommendations for further studies are made:

1. A study of vocational choice should be made to determine those factors that influence students to major in collegiate secretarial or business education programs.

2. A group should be identified, through the Brown-Holtzman Survey of Study Habits and Attitudes, as having poor study habits and attitudes. These selected students should then be placed in a special beginning shorthand class to determine if special teaching techniques could overcome poor study habits and attitudes and lead to successful beginning shorthand achievement.

3. Further research should be conducted with certain scales of the California Psychological Inventory, the Watson-Glaser Critical Thinking Appraisal, and the name-checking subtest of the Minnesota Clerical Test to verify their high relationship to beginning shorthand success. Norms or scales specifically useful for counselors in counseling students interested in enrolling in beginning shorthand should be developed as part of this research.

4. A study should be conducted to determine the extent to which quantity and quality of previous office work experience affects

transcription achievement.

5. A study should be conducted to determine what similarities or differences exist between successful shorthand students and successful students majoring in collegiate programs unrelated to shorthand.

6. A study should be conducted to determine the extent to which the emphasis of spelling through formal classroom instruction has on beginning shorthand and transcription achievement.

7. A study should be conducted to determine the extent to which a required remedial English composition class has on beginning shorthand and transcription achievement.

8. A study should be conducted to determine the relationship of critical thinking and success in the transcription class and success on the job.

9. Follow-up studies should be conducted to determine the degree of job success of the shorthand students classified as successful or unsuccessful according to final class grade or selected classroom achievement or standardized tests.

APPENDIX A

GENERAL GUIDE FOR RESEARCH EXAMINERS

General Information

Your part in this state-wide research project is an important one. It will be up to you to uniformly administer all of the standardized tests, keep track of all data collected and transmitted, and act as a liaison between me and the class instructors.

Each instructor is foregoing class time because they feel this project is an important one. Thus, it's your real responsibility to maintain cordial relations--and administer each of the tests at the convenience of each instructor. Remember: without the willingness and cooperation of these faculty members, our project would not be possible.

Develop good working relations with the students. If they have confidence in you, they'll answer more confidently and honestly. Do all you can to reduce any test anxiety that might occur--and be certain to always stress that all of this information is strictly confidential and will not have any bearing on their class grade or standing.

You've been selected as an examiner because of your ability to work effectively. Organize your time and material so that every minute of class time is efficiently used.

The attached material should provide answers to any questions you may have; please contact me immediately, however, should you have any additional questions or problems.

WHAT TO TELL THE STUDENTS

Naturally, students will be curious about why they are taking these tests. Tell them this:

> They are part of a state-wide research project that is being conducted in seven colleges throughout Michigan.

And be certain you stress this:

> All of the information that is gathered for this research project is confidential. They, their instructor, or their school will not be identified in any way; thus, every student should answer confidently and honestly.

MAKING ARRANGEMENTS FOR TESTING

Always discuss several days in advance with each instructor the most convenient day for administering the standardized tests. Exact time required for each test will usually depend on the speed at which the students are able to work and the time needed to give directions. Discuss the time needed with the instructor. Because some time may be available after the testing is completed, some regular classroom activity can take place.

TIME SCHEDULE

These minimum time requirements should be kept in mind:

1. Minnesota Clerical: actual test time is 15 minutes
2. Wellesley Spelling: about 15 minutes is needed
3. Study Habits and Attitudes: about 20 minutes is needed
4. California Psychological: about 45 minutes
5. Critical Thinking: about 45 minutes (often less)

Plan your schedule for the most effective and efficient use of class time. Give as many tests as possible in one class meeting. And remember, the above time requirements do not include time for giving instructions (minimal on some, more complex on others).

ADMINISTERING THE TESTS

It's important to keep in mind that you are giving a test (although please don't call them "tests")--not directing a learning activity.

After giving the directions and answering any specific questions related to each test and the use of the answer sheet, no advice should be given that may influence the student's response in any manner. Do not walk around the room or look over any student's shoulder while the test is underway. Stand in front of the room.

A separate instruction sheet for administering each standardized test is attached. AS SOON AS POSSIBLE AND AGAIN BEFORE ADMINISTERING EACH TEST, PLEASE READ EACH SHEET CAREFULLY.

Should you have any questions, write or call me collect at:

Home: 616-349-5093 WMU: 616-383-1908

Please do not improvise; if you're not certain of what to do, find out. It's important that you follow the directions.

RECORD KEEPING AND DATA TRANSMITTAL

Keep an individual control sheet (that will be supplied) for each class. Immediately after each test, record the data gathered on these control sheets and send the answer sheets to me:

L. M. Moskovis
Business Education Department
School of Business
Western Michigan University
Kalamazoo, Michigan 49001

As soon as possible, please supply me with a carbon copy of each of your control sheets.

Keep track of all the postage and bill me.

ABOUT THOSE ABSENTEES

If there is an unusually heavy class absence the day that you plan to administer a test, it would be more sensible to postpone the test. Discuss this possibility with the instructor when making your arrangements.

Absentees should make up each test within one week. To conserve time, you should schedule a general make-up session.

PAYMENT SCHEDULE

I appreciate your willingness to participate in this project; your role is an important one. Please keep track of all time spent and other expenses; you may want to be paid at the end of all your work, half-way through, or some other method. Whatever you decide, just bill me for the amount--and you'll hear from me via a check in the return mail.....with many, many thanks!

DIRECTIONS FOR ADMINISTERING

Brown-Holtzman Survey of Study Habits and Attitudes

Materials Needed

1. A copy of the Survey of Study Habits and Attitudes for each student
2. A machine-scoring answer sheet for each student (labeled WMU testing)
3. A #2 pencil for each student
4. A piece of chalk for writing directions on the board

Special Requirement

Immediately upon entering the room, the following information should be clearly written on the chalkboard in several places so that it may easily be read from any seat in the room:

Mark 1 for RARELY, which means 0 to 15% of the time

Mark 2 for SOMETIMES, which means 16 to 35% of the time

Mark 3 for FREQUENTLY, which means 36 to 65% of the time

Mark 4 for GENERALLY, which means from 66 to 85% of the time

Mark 5 for ALMOST ALWAYS, which means from 86 to 100% of the time

Time Requirements

While there is no time limit, most students should finish in about 20 minutes; after 20 minutes, unusually slow students may be urged, if necessary, to work a bit more rapidly.

T E S T A D M I N I S T R A T I O N

Remind students that they are participating in a state-wide research project. Assure them that this survey has absolutely no bearing on their grade or their standing at this college and that all information is confidential.

1. Distribute the answer sheets and #2 pencils. Ask students to complete the information section of the answer sheet.

2. Then say:

> Please notice that this answer sheet is numbered horizontally rather than vertically. Be certain that the question in the test booklet corresponds with the number on your answer sheet.
>
> Note: please illustrate this method of answering on the

board; most students are in the habit of using vertical-type answer sheets. Ask for questions.

Be certain to use the #2 pencil in marking your answers.

3. After this is done, say:

I'm now going to distribute your survey booklets--please do not make any marks in this booklet; all answers are to be marked on the answer sheet. Do not turn the page until told to do so.

4. When each person has a booklet, say:

Please read the directions on the front of the booklet silently while I read them aloud (do so)

Stress:
A. This is not a test
B. There are no right or wrong answers
C. Mark each statement on the basis of what you actually think or do--not what you think you should do
D. All information is completely confidential

EXPLAIN IN DETAIL THE METHOD OF USING ANSWER SHEET

Let's look at Question 1. It asks, "I FEEL THAT TEACHERS DO NOT UNDERSTAND THE STUDENT'S PROBLEMS."

Notice the key I have written on the chalkboard. If your answer is rarely, you would mark the small number 1; if your answer is almost always, you would mark the small number 5.

ARE THERE ANY QUESTIONS????

Remember: every question should be answered on the basis of how you actually feel or what you actually do. It's very important that you answer on this basis.

ARE THERE ANY QUESTIONS about using the answer sheet. Notice the key is also indicated in your test booklet.

If there are no further questions, you may begin.

5. When all examinees have finished, collect the booklets, answer sheets, and pencils. BE CERTAIN THAT EACH PERSON HAS WRITTEN HIS NAME ON THE ANSWER SHEET and that all material is accounted for.

DIRECTIONS FOR ADMINISTERING

The California Psychological Inventory

Materials Needed

1. A copy of the California Psychological Inventory for each student.
2. A special California Psychological Inventory answer sheet; no special pencil is required for completing this answer sheet.

Time Requirements

While there is no time limit, most students should finish in about 45 minutes.

TEST ADMINISTRATION

Remind students that they are participating in a state-wide research project. Assure them that this test has absolutely no bearing on their grade or their standing at this college and that all information is confidential.

1. Distribute the answer sheets and ask the students to complete the information section.

2. After this is done, say:

   Notice that this answer sheet is numbered horizontally rather than vertically. Read the directions for completing the answer sheet very carefully.

   If your answer to a question is true, mark a dark X above the number; if your answer is false, mark a dark X below the number. (Please illustrate on the board)

3. Distribute the booklets, saying:

   Do not make any marks in this booklet; all answers are to be marked on the answer sheet. Do not open the booklet until I tell you to do so.

   Please read the directions on the booklet silently while I read them aloud. (do so)

   Stress:
   A. This is not a test
   B. There is no right or wrong answer
   C. All answers are completely confidential

4. After all questions have been answered, students should begin. If questions arise about the definition of a word while the test is

in process, the examiner may answer them. Questions requesting explanation of a concept or interpretation of a test item are usually dealt with by encouraging the student to use his own judgment. If any item seems particularly troublesome to a student, he may be advised to leave it blank.

5. When all examinees have finished, collect the test books, answer sheets being certain that all are returned and that each student has written his name on the answer sheet.

DIRECTIONS FOR ADMINISTERING

The Minnesota Clerical Test

Materials Needed

1. A copy of the Minnesota Clerical Test for each student
2. A stop-watch or other satisfactory timing device

Note: No answer sheets are used for this test; students write directly on the test booklet. Any kind of pencil may be used.

Time Requirements

THIS TEST MUST BE STRICTLY TIMED. Fifteen (15) minutes is required to complete this test; the time is divided as follows:

Test 1 Number Checking	exactly 8 minutes required
Test 2 Name Checking	exactly 7 minutes required
	exactly 15 minutes required

T E S T A D M I N I S T R A T I O N

Remind students that they are participating in a state-wide research project. Assure them that this test has absolutely no bearing on their grade or their standing at this college and that all information is confidential.

1. Distribute the test folders, warning the students not to open them; as soon as all the tests are distributed, say:

   Write your name, student number, and school on the first page.

   Now read the instructions very carefully and work the samples as directed at the bottom of the first page.

2. After the students have completed the samples and understand the directions, read the correct answers to the sample questions. ASK FOR QUESTIONS.

3. When all questions have been answered and students understand specifically how to proceed, say:

   Be ready to open the folder, and when I give the signal, start. Begin checking those numbers that are the same; those numbers that are different should be left blank.

   When I give the signal to STOP, stop immediately and draw a line under the last one you are looking at.

Now open your folder and begin. (begin timing for exactly 8 minutes)

4. At the end of exactly eight minutes, say:

   STOP. . . and draw a line under the last number you were looking at.

   Close your folder and turn it over so you are looking at the back where it says "Ready for Test?"

5. When everyone has turned over his folder, say:

   Be ready to open the folder; and when I give the signal, start. Begin checking those names that are the same; those names that are different should be left blank. When I give the signal to STOP, stop immediately and draw a line under the last one you are looking at.

   Now open your folder to Test 2 and start. (begin timing for exactly seven minutes)

6. At the end of exactly seven minutes, say:

   STOP. . . and draw a line under the last name you were looking at. Please turn back to the front page.

7. Collect the test booklets being certain that each person has placed his name on the test booklet.

DIRECTIONS FOR ADMINISTERING

The Watson-Glaser Critical Thinking Appraisal

Materials Needed

1. A copy of the Watson-Glaser Critical Thinking Appraisal for each student
2. A special W-G Critical Thinking answer sheet for each student; no special pencil is needed.
3. Stop-watch

Time Requirements

While there is no time limit, most students should finish in about 35 minutes. Every student should be allowed to finish. If any student has not finished when time is called, this fact should be recorded on his paper and the total time spent.

Each individual test is timed in order to pace the students; the breakdown to follow is:

1.	Inference	13 minutes maximum
2.	Recognition of Assumptions	6 minutes maximum
3.	Deduction	10 minutes maximum
4.	Interpretation	9 minutes maximum
5.	Evaluation of Arguments	6 minutes maximum
		44 minutes maximum

T E S T A D M I N I S T R A T I O N

Remind students that they are participating in a state-wide research project. Assure them that this appraisal has no bearing on their grade or their standing at this college and that all information is confidential.

1. Distribute answer sheets and ask students to complete information section.

2. Distribute test booklets, saying:

   > Please do not make any marks in this booklet; all answers are to be made on the special answer sheet. Do not turn the page until you are told to do so.

3. When each person has a test booklet, say:

   > This booklet contains five tests designed to find out how logically and analytically you can think.

Each test is preceded by its own specific directions. When I tell you to begin, you will read the directions for the first test and study the sample questions until you know what you are to do.

If you cannot readily determine what the directions mean, raise your hand and I will explain them to you. Do not ask questions about a test after you start to answer it.

For each question, decide what you think is the best answer; then record your choice by making a black mark between the appropriate pair of dotted lines on the answer sheet.

You may answer a question even when you are not perfectly sure that your answer is correct, but you should avoid wild guessing. Do not spend too much time on any one item. When you finish a page, go right on to the next one. If you finish all of the tests before time is up, go back and check your answers. Work as rapidly and as accurately as you can.

In marking your answers, always be sure that the answer space is numbered the same as the question in the test booklet.

You will be allowed 13 minutes for the first test. This is ample time for all of you to answer every question without hurrying if you do not take too long on any one question. When you finish Test 1, go right on to Test 2 without waiting.

So that you will have a guide in spacing your time, I am going to stop any of you who have not finished each test in the usual time and start you on the next test. Those who run a bit short of time on some tests may have time left at the end. When you finish Test 5, the last test, you can go back and answer any questions that you skipped, and check your answers to the other questions. If you finish a test before time is called, go right ahead to the next test.

Remember, you are to start reading the directions when I tell you to start and continue working on the successive tests until I tell you to stop.

4. When this information has been given, please review what you just said; then, ask students for questions.

5. When all questions have been answered, students may begin. Keep track of the time and announce the time after 13, 6, 10, 9, 6 minutes have elapsed (see time requirements). Remind students that they may go back and complete any unanswered questions later.

6. At the end of the available time, please collect test booklets and answer sheets being certain that all are returned and that each student has written his name on answer sheet.

DIRECTIONS FOR ADMINISTERING

The Wellesley Spelling Scale

Materials Needed

1. A copy of the Wellesley Spelling Scale for each student
2. A machine-scoring answer sheet (labeled WMU testing)
3. A #2 pencil for each student

Time Requirements

While there is no time limit, most students should finish in about 15 minutes. After 15 minutes, unusually slow students may be urged, if necessary, to work more rapidly.

T E S T A D M I N I S T R A T I O N

Remind students that they are participating in a state-wide research project. Assure them that this scale has absolutely no bearing on their grade or their standing at this college and that all information is confidential.

1. Distribute the answer sheets and the #2 pencils; ask students to complete the information section of the answer sheet.

2. After this is done, say:

   > Please notice that this answer sheet is numbered horizontally rather than vertically. Be certain that the answer in the test booklet corresponds with the number on the answer sheet.

   Please illustrate this type of answer sheet on the board; most students are in the habit of using vertical-type answer sheets.

   > Be certain to use a #2 pencil in marking your answers.

3. After this is done, distribute the booklets, saying:

   > Do not make any marks in the booklets; all answers are to be made on the answer sheet. Do not turn the page until told to do so.

4. When each person has a booklet, say:

   > Please read the instructions written on the booklet silently while I read them aloud. They are:

This is a spelling test. After each of the sentences in this booklet there are four spellings of the word which has been omitted in the sentence. Decide which form of the word is correctly spelled and mark its number.

Look at Sample A: A good leader is a friend of the people. Number 2 is correctly spelled--so the small 2 would be heavily marked on your answer sheet.

Look at Sample B. (continue in same manner)

If there are no questions, you may begin.

5. When all examinees have finished, collect the booklets, answer sheets, and pencils. Be certain that each person has written his name on the answer sheet and that all material is accounted for.

APPENDIX B

STUDENT INFORMATION FORM

Name_____ Age_____ School_____

Local Address_____ Phone_____

Home Address_____ City_____ State_____ Zip_____

Major: Business Teacher Education____ Class: Freshman____ Female_____
Two-year Secretarial_____ Sophomore___ Male_____
Four-year Secretarial_____ Junior_____
Other (specify)_____ Senior_____
Other_____

List all the shorthand courses you have ever taken. Include courses taken in high school, evening school, business school, junior college, university. Please specify number of weeks, quarters or semesters. Do NOT include the shorthand course you are now taking.

Course	Place Taken	Amount of Time		
		No. of Quarters	No. of Semesters	Other (less than qr. or sem.)

List all the typing courses you have ever taken. Include courses taken in junior high, summer school, evening school, business school, junior college, university. Please specify number of weeks, quarters, semesters. Do NOT include the typing course you are now taking.

Course	Place Taken	Amount of Time		
		No. of Quarters	No. of Semesters	Other (less than qr. or sem.

APPENDIX C

OFFICE EXPERIENCE RECORD

Name_____ School_____

Please list all the office jobs you have ever held--including your present job. If you are doubtful about any job, please list the job and clarify in the COMMENTS section. If you have NO office work experience, mark NONE on line 1.

Job Title	How many months did you work here?	How many hours a week did you work?	How many hours a week did you spend typing? (other than shorthand transcription)				How many hours a week did you spend writing and transcribing shorthand?				COMMENTS (Please add any clarifying information here)
			Less than 10	10 to 20	20 to 30	More than 30	Less than 10	10 to 20	20 to 30	More than 30	
1.											
2.											
3.											
4.											
5.											
6.											
7.											

APPENDIX D

DIRECTIONS FOR ADMINISTERING

The Transcription Letters

These letters are intended for the transcription classes only. Four letters to be dictated at speeds of 60, 80, 100, and 120 words a minute are attached. All student transcripts are to be typed. All letters are three minutes long.

When to Administer

These letters should be given within the last four weeks of the school term.

Dictating Procedures

All letters are marked in 15 second intervals. The diagonal line indicates each 15 second interval.

NO PREVIEW SHOULD BE GIVEN. Warm-up drill on other dictation material is permitted, however.

Transcribing Procedure

1. Each student should type her name and school in the upper right hand corner of each transcript.

2. No inside address is needed; only the salutation is necessary.

3. Students should double space.

4. Students should erase all errors and may use a dictionary and a secretarial manual.

5. The shorthand notes should be stapled to each transcript.

Transcribing Time

While there is no time limit for transcribing these letters, please ask students to indicate transcription time on each transcript. Normally, one letter a day should be given along with other class work. Depending on the time available in each class, it may be feasible to dictate the 60 and 80 letters in one day and have them transcribed. The 100 and 120 letters will probably need to be given on separate days.

SIXTY WORDS A MINUTE

Dear Mr. Smith:

The sale of new automobiles was extremely low last week even/ though we advertised a special price on each model. However, it was not due to/ a lack of advertising. As you know, the weather was mainly responsible.

After/ the heavy snow on Thursday and Friday, we did not expect our sale on that Saturday (1) to be successful. In fact, neither the salesmen nor the customers could reach/ our place of business.

Therefore, we are now expecting to feature the same low prices/ on each model for this coming Saturday. We sincerely hope the weather cooperates/ this time!

Every car in stock will be reduced in price by ten per cent, and we (2) have almost every model in stock. In some cases the choice of color is limited/ but each car is available with a variety of accessories. You/ may wish to drop in earlier in the week and spend more time examining each car./ Plan today to visit our place of business Saturday to make a deal.

Yours truly, (3)

EIGHTY WORDS A MINUTE

Dear Miss Smith:

Did you read any good books in the last month? Have you read the latest novel? Probably not, because/ libraries seldom buy more than two or three copies and there is usually a waiting list for the latest/ novels.

People have solved the problem of reading the new books by joining the Readers Book Club. As a member you/ receive a weekly newspaper about new books, not only novels but other kinds of books also. A group of (1) experts reviews selected books and writes short summaries of them. Each month you receive a card on which you merely mark/ your choice of one of nine books at the special membership price of $3. If you prefer, you may purchase other/ monthly selections at the same $3 rate. To keep your membership active, you need purchase only six/ books every twelve months. So without leaving your home, your membership in the Readers Book Club keeps you up with news (2) of current books and provides opportunities to build up your personal library at an extremely low/ cost.

Perhaps you are interested in only one type of book, such as mysteries. If so, just indicate your/ desires on the enclosed questionnaire and receive only the notices about this specific type.

If you do decide/ to terminate your membership, we will take care of the matter promptly and without question. Join today.

Yours, (3)

ONE HUNDRED WORDS A MINUTE

Dear Teacher:

Are you interested in increasing the efficiency of your teaching? Are you worried about the amount of knowledge and/ understanding that students display about the events occurring in our great country daily? If so, please continue reading.

The American/ Publishing Company has been concerned about this problem for a long time. We desired to help young Americans in our country but/ we were not sure about an appropriate way to help. In the past seven years, however, a considerable number of teachers have (1) written to us suggesting ways they thought we might aid them. Consequently, we decided that now is the right time to act. After months in/ interviewing applicants, we employed Mr. Sam Jones for the position of educational director. Mr. Jones was formerly a/ teacher but has been working as a report writer for a large publisher for the past three years. He comes to us with very high recommendations/ from his past employer.

A committee was organized to advise Mr. Jones in his new program. They carefully analyzed the (2) problem and studied all incoming suggestions.

American Publishing Company will begin publishing a weekly bulletin for/ high school students. The bulletin contains articles giving important news of the past week. Each article is written so that it is clear/ and understandable to the student and has illustrations to bring out important aspects of each story. Please read the sample copies/ of our newspaper.

We would very much appreciate any remarks or suggestions that would help us improve this program.

Sincerely yours, (3)

ONE HUNDRED TWENTY WORDS A MINUTE

Dear Mr. Anderson:

Do you know what you expect to achieve when you read a book? Some people strive only for romance while others read to gain knowledge. A few people/ do not read at all or find it too exhausting to read. These people avoid reading anything and do not even read the daily newspaper. Whether you enjoy reading/ romances or whether you prefer to read about the lives of famous people, the Great Books Club always provides several important selections each month. As a/ member, you receive a pamphlet that describes the selections around the beginning of each month. All that you need to do is mark your choice on the enclosed order blank and (1) send it to our company. In ten days you will receive the book in the mail. Also, you can order more than one book each month or none at all. Members take a twenty-five/ per cent discount on every book purchased, and you need purchase only four books a year to retain your membership.

The Great Books Club offers a wide variety of/ selections for old members. The Club has also included a feature that no other book club offers. Outstanding offers are constantly made to attract new readers/ but the usual book club never offers these outstanding selections to their regular members.

As a Great Books Club member you also have this advantage: Our introductory (2) offer to new members changes at the beginning of each calendar year. If you as a regular subscriber purchased nine books during the past year, you/ receive the special offer free. If you are a regular subscriber but have not purchased nine books during the past year, you may purchase the special offer selection/ at the regular twenty-five per cent discount.

We hope you enjoy reading whether reading for pleasure or knowledge. We hope that you decided to enroll as a subscriber/ of the Great Books Club today. If so, the introductory book will be in your possession in ten days. Our readers are usually satisfied.

Sincerely yours, (3)

APPENDIX E

DIRECTIONS FOR ADMINISTERING

The Shorthand Reading Test

This is a timed test and is intended for the beginning shorthand classes only.

When to Administer

This test should be given to the beginning classes within a two-week period following the last theory chapter in the textbook.

Materials Needed

1. A test booklet for each student
2. A stop watch or other timing device
3. Each student should provide her own pencil or pen
4. Each student should provide her own sheet of 8½ x 11 lined paper.

T E S T A D M I N I S T R A T I O N

1. Ask each student to write her name and school in the upper right hand corner of a sheet of 8½ x 11 lined paper.

2. Advise students to have a spare pen or pencil available.

3. Before distributing the test booklets, say:

   Please do not open this booklet until you are told.

4. When each person has a booklet and the materials for transcribing, say:

   This is a test that will require you to transcribe from shorthand into longhand. Please write neatly.

   When I give the signal, open the test booklet and begin transcribing into longhand. Please skip every other line on your paper for ease of scoring. You may not use a dictionary during this test.

   You will have exactly 15 minutes to complete this test.

   Are there any questions?

5. When all the questions are answered and the students know exactly what to do, begin timing the test. At the end of exactly 15

minutes, call time and collect all test booklets and transcripts. Please be certain that each person has turned in a booklet and has written her name on the transcript.

APPENDIX F

DIRECTIONS FOR ADMINISTERING

The Three-Minute Straight-Copy Timed Writing Test

When to Give

This timed writing is intended for the transcription classes only and should be given during the tenth (10) week of class instruction.

Duration of Time

This is a three-minute timed writing; two efforts should be allowed.

Directions for Administering

For students:

A. Type your name, class, school and instructor's name in upper right hand corner.

B. Double space.

C. Set tab for indenting paragraphs.

D. Set left margin at 13 and throw carriage at the end of each copy line.

E. Do not erase during the timing.

F. Should you finish the copy before time is called, begin again.

G. STOP immediately at the signal.

For instructors:

A. Each timed writing should be given for exactly three minutes.

B. NO previews should be given.

C. Two attempts on the same copy should be allowed; the second try should be typed on the back of the first.

D. Students may circle all errors on the timing they wish considered. The timing not to be considered should be crossed out with a dark diagonal line.

E. Speed may or may not be figured--depending on your personal wishes.

APPENDIX G

DIRECTIONS FOR ADMINISTERING

The Diamond Jubilee Brief Form Test

When to Administer: This test should be given within one week after the completion of Chapter 33 in the beginning textbook. The test should be previously announced.

Dictation Speed: Please dictate one brief form every eight (8) seconds; each word may be repeated once.

Transcription Time: No more than twenty (20) minutes should be allowed for transcribing (in pencil or pen); caution students: If the brief form has more than one meaning, all must be included.

Please use the answer sheet provided for this test.

1. how, out
2. yesterday
3. work
4. object
5. during
6. important, importance
7. satisfy, satisfactory
8. their, there
9. responsible
10. company
11. throughout
12. order
13. send
14. our, are, hour
15. probable
16. difficult
17. particular
18. purpose
19. advertise
20. acknowledge
21. with
22. will, well
23. than
24. world
25. part
26. good
27. value
28. should
29. quantity
30. success
31. regard
32. wish
33. which
34. progress
35. they
36. those
37. have
38. correspond, correspondence
39. idea
40. character
41. manufacture
42. envelope
43. advantage
44. regular
45. state
46. never
47. speak
48. could
49. between
50. were, year
51. about
52. several
53. present
54. situation
55. govern
56. big
57. street
58. from
59. in, not
60. upon
61. when
62. use
63. yet
64. suggest
65. business
66. morning
67. won, one
68. thank
69. public
70. opinion
71. newspaper
72. glad
73. request
74. of
75. Mr.
76. why
77. over
78. where
79. next
80. recognize
81. railroad
82. immediate
83. at, it
84. circular
85. publish, publication
86. Mrs.
87. put
88. was
89. such
90. organize
91. experience
92. but
93. I
94. ordinary
95. shall
96. thing, think
97. short
98. enclose
99. general
100. subject

APPENDIX H

DIRECTIONS FOR ADMINISTERING

The Simplified Brief Form Test

When to Administer: This test should be given within one week after the completion of Chapter 52 in the beginning textbook. The test should be previously announced.

Dictation Speed: Please dictate one brief form every eight (8) seconds; each work may be repeated once.

Transcription Time: No more than twenty (20) minutes should be allowed for transcribing (in pencil or pen); caution students: If the brief form has more than one meaning, all must be included.

Please use the answer sheet provided for this test.

1. worth
2. want
3. after
4. prosecute
5. request
6. body
7. ordinary
8. like
9. with
10. what
11. correspond, correspondence
12. where
13. opinion
14. under
15. business
16. consider, consideration
17. likewise
18. quantity
19. necessary
20. about
21. won, one
22. always
23. experience
24. please
25. yesterday
26. purpose
27. future
28. return
29. etc.
30. how, out
31. morning
32. when
33. any
34. general
35. individual
36. character
37. between
38. never
39. let, letter
40. the
41. thing, think
42. gone
43. order
44. why
45. am, more
46. big
47. great
48. could
49. been
50. did, date
51. idea
52. difficult
53. part
54. satisfy, satisfactory
55. bill
56. yet
57. several
58. must
59. right, write
60. direct
61. else
62. enough
63. will, well
64. long
65. number
66. suggest, suggestion
67. all
68. unable
69. go, good
70. opportunity
71. allow
72. matter
73. you, your
74. conclude
75. every
76. regular
77. advertise
78. that
79. throughout
80. world
81. glad
82. regard
83. merchandise
84. otherwise
85. remainder
86. there, their
87. which
88. circle
89. side
90. deliver
91. have
92. stand
93. upon
94. are, our, hour
95. refer, reference
96. should
97. remit, remittance
98. question
99. speak
100. put

APPENDIX I

DIRECTIONS FOR ADMINISTERING

The Diamond Jubilee Theory Test

When to Administer: This test should be given within one week after the completion of Chapter 48 in the beginning textbook. The test should be previously announced.

Dictation Speed: Please dictate one word every ten (10) seconds; each word may be repeated once.

Transcription Time: No more than twenty (20) minutes should be allowed for transcribing (in pencil or pen).

Please use the answer sheet provided for this test.

1. properly
2. appliance
3. penalty
4. usual
5. tax
6. increasingly
7. vice versa
8. anxious
9. self reliant
10. specifications
11. container
12. worthwhile
13. judged
14. further
15. employees
16. total
17. immodest
18. yellow
19. October
20. foe
21. unable
22. proceedings
23. readily
24. stood
25. afterwards
26. urge
27. gleam
28. while
29. gratitude
30. congratulate
31. either
32. consumer
33. likelihood
34. five hundred dollars
35. strength
36. result
37. promptly
38. patient
39. ought
40. electric motor
41. postpone
42. assortment
43. freedom
44. confidently
45. definite
46. devised
47. induce
48. necessary
49. child
50. thermometer
51. assistance
52. mark
53. neighbors
54. files
55. equal
56. confirm
57. electricity
58. friendly
59. subscribed
60. swell
61. waited
62. permission
63. lecture
64. always
65. aim
66. although
67. mystery
68. awoke
69. calculations
70. appoint
71. leadership
72. Thursday
73. privilege
74. thorough
75. committee
76. transcribe
77. uncertain
78. economical
79. diploma
80. beautiful
81. attempt
82. superlative
83. meant
84. believe
85. popularity
86. changed
87. associates
88. executives
89. fine
90. assumption
91. advertisement
92. Evansville
93. hair
94. discouragement
95. ease
96. auditors
97. perhaps
98. financial
99. reason
100. advisable

APPENDIX J

DIRECTIONS FOR ADMINISTERING

The Simplified Theory Test

When to Administer: This test should be given within one week after the completion of Chapter 53 in the beginning textbook. The test should be previously announced.

Dictation Speed: Please dictate one word every ten (10) seconds; each word may be repeated once.

Transcription Time: No more than twenty (20) minutes should be allowed for transcribing (in pencil or pen).

Please use the answer sheet provided for this test.

1. rated
2. efficiently
3. pending
4. imposition
5. shortly
6. equal
7. Thursday
8. supervision
9. flame
10. indicate
11. dispose
12. announce
13. aftermath
14. physical
15. extreme
16. tedious
17. improve
18. oxford
19. engineer
20. last
21. provide
22. piano
23. electric motor
24. projected
25. positive
26. helpless
27. entrance
28. framed
29. debate
30. appliance
31. misunderstood
32. receive
33. resumption
34. post office
35. figure
36. tonight
37. call
38. shipped
39. unit
40. card
41. assume
42. Pittsburgh
43. within
44. wheel
45. resist
46. wash
47. thoroughly understood
48. open
49. adult
50. outline
51. clutch
52. financial
53. hastily
54. parking
55. credit
56. sensible
57. dismiss
58. mistake
59. surprisingly
60. classification
61. tax
62. examine
63. transplant
64. quick
65. temper
66. A. M.
67. carpenter
68. careful
69. vexation
70. earth
71. southern
72. selfish
73. upward
74. favor
75. almost
76. circumstantial
77. toil
78. five hundred thousand (500,000)
79. fellowship
80. cruelty
81. radio
82. regent
83. agreement
84. awake
85. furniture
86. strained
87. require
88. demand
89. strange
90. security
91. complain
92. strenuous
93. include
94. earliest
95. information
96. truck
97. program
98. trunk
99. resort
100. yellow

APPENDIX K

Raw Score Means of the Successful and Unsuccessful College Level Beginning Shorthand Students and Those of High School and College Female Student Samples on the Eighteen Scales of the CPI[1]

Scale	Mean Scores N=82 S	Mean Scores N=61 U	Mean Scores N = 4,056 H.S. Students	Mean Scores N = 2,120 Col. Students
Dominance	24.10	23.36	23.7	28.5
Capacity for status	18.39	16.80	16.0	22.2
Sociability	23.24	23.01	21.4	26.0
Social presence	34.15	33.91	31.1	37.0
Self-acceptance	21.12	20.90	18.9	19.5
Sense of well-being	33.80	31.59	34.6	37.5
Responsibility	29.90	26.80	30.0	33.3
Socialization	37.41	34.60	39.4	39.5
Self-control	26.07	22.90	27.6	30.8
Tolerance	19.74	18.09	18.7	25.0
Good impression	14.12	13.40	15.7	19.1
Communality	25.90	24.54	26.1	25.5
Achievement via conformance	24.79	21.93	24.1	28.8
Achievement via independence	18.48	17.11	15.5	21.9
Intellectual efficiency	35.69	31.90	34.4	41.4
Psychological-mindedness	9.21	8.16	8.7	11.4
Flexibility	9.82	10.31	8.9	11.6
Femininity	23.01	22.26	24.1	22.8

[1]CPI Manual, p. 35

APPENDIX M

ADJECTIVES DESCRIBING THE HIGH AND LOW SCORERS
ACCORDING TO THE EIGHTEEN SCALES OF THE CPI

Dominance

High Scorers: Aggressive, confident, persistent, and planful, as being persuasive and verbally fluent; as self-reliant and independent; and as having leadership potential and initiative.

Low Scorers: Retiring, inhibited, commonplace, indifferent, silent and unassuming; as being slow in thought and action; as avoiding of situations of tension and decision; and as lacking in self-confidence.

Capacity for status

High Scorers: Ambitious, active, forceful, insightful, resourceful, and versatile; as being ascendant and self-seeking, effective in communication; and as having personal scope and breadth of interests.

Low Scorers: Apathetic, shy, conventional dull, mild, simple, and slow; as being stereotyped in thinking, restricted in outlook and interests; and as being uneasy and awkward in new or unfamiliar social situations.

Sociability

High Scorers: Outgoing, enterprising, and ingenious; as being competitive and forward; and as original and fluent in thought.

Low Scorers: Awkward, conventional, quiet, submissive, and unassuming; as being detached and passive in attitude; and as being suggestible and overly influenced by others' reactions and opinions.

Social presence

High Scorers: Clever, enthusiastic, imaginative, quick, informal, spontaneous, and talkative; as being active and vigorous; and as having an expressive, ebullient nature.

Low Scorers: Deliberate, moderate, patient, self-restrained, and simple, as vacillating and uncertain in decision; and as being literal and unoriginal in thinking and judging.

Self acceptance

High Scorers: Intelligent, outspoken, sharp-witted, demanding, aggressive, and self-centered; as being persuasive and verbally fluent; and as possessing self-confidence and self-assurance.

Low Scorers: Methodical, conservative, dependable, conventional, easygoing, and quiet; as self-abasing and given to feelings of guilt and self-blame; and as being passive in action and narrow in interests.

Sense of well-being

High Scorers: Energetic, enterprising, alert, ambitious, and versatile; as being productive and active, and as valuing work and effort for its own sake.

Low Scorers: Unambitious, leisurely, awkward, cautious, apathetic, and conventional; as being self-defensive and apologetic; and as constricted in thought and action.

Responsibility

High Scorers: Planful, responsible, thorough, progressive, capable, dignified, and independent; as being conscientious and dependable, resourceful and efficient; and as being alert to ethical and moral issues.

Low Scorers: Immature, moody, lazy, awkward, changeable, and disbelieving; as being influenced by personal bias, spite, and dogmatism; and as under-controlled and impulsive in behavior.

Socialization

High Scorers: Serious, honest, industrious, modest, obliging, sincere, and steady; as being conscientious and responsible; and as being self-denying and conforming.

Low Scorers: Defensive, demanding, opinionated, resentful, stubborn, headstrong, rebellious, and undependable; as being guileful and deceitful in dealing with others; and as given to excess, exhibition, and ostentation in their behavior.

Self-control

High Scorers: Calm, patient, practical, slow, self-denying, inhibited, thoughtful, and deliberate; as being strict and thorough in their own work and in their expectations for others; and as being honest and conscientious.

Low Scorers: Impulsive, shrewd. excitable, irritable, self-centered, and uninbitied; as being aggressive and assertive; and as overemphasing personal pleasure and self-gain.

Tolerance

High Scorers: Enterprising, informal, quick, tolerant, clear-thinking, and resourceful; as being intellectually able and verbally fluent; and as having broad and varied interests.

Low Scorers: Suspicious, narrow, aloof, wary, and retiring; as being passive and overly judgmental in attitude; and as disbelieving and distrustful in personal and social outlook.

Good impression

High Scorers: Co-operative, enterprising, outgoing, sociable warm, and helpful; as being concerned with making a good impression; and as being diligent and persistent.

Low Scorers: Inhibited, cautious, shrewd, wary, aloof, and resentful; as being cool and distant in their relationships with others; and as being self-centered and too little concerned with the needs and wants of others.

Communality

High Scorers: Dependable, moderate, tactful, reliable, sincere, patient, steady, and realistic; as being honest and conscientious; and as having common sense and good judgment.

Low Scorers: Impatient, changeable, complicated, imaginative, disorderly, nervous, restless, and confused; as being guileful and deceitful; inattentive and forgetful; and as having internal conflicts and problems.

Achievement via conformance

High Scorers: Capable, co-operative, efficient, organized, responsible, stable, and sincere; as being persistent and industrious; and as valuing intellectual activity and intellectual achievement.

Low Scorers: Coarse, stubborn, aloof, awkward, insecure, and opinionated; as easily disorganized under stress or pressures to conform; and as pessimistic about their occupational futures.

Achievement via independence

High Scorers: Mature, forceful, strong, dominant, demanding, and foresighted; as being independent and self-reliant; and as having superior intellectual ability and judgment.

Low Scorers: Inhibited, anxious, cautious, dissatisfied, dull, and wary; as being submissive and compliant before authority; and as lacking in self-insight and self-understanding.

Intellectual efficiency

High Scorers: Efficient, clear-thinking, capable, intelligent, progressive, planful, thorough, and resourceful; as being alert and well-informed; and as placing a high value on cognitive and intellectual matters.

Low Scorers: Cautious, confused, easygoing, defensive, shallow, and unambitious; as being conventional and stereotyped in thinking; and as lacking in self-direction and self-discipline.

Psychological-mindedness

High Scorers: Observant, spontaneous, quick, perceptive, talkative, resourceful, and changeable; as being verbally fluent and socially ascendant; and as being rebellious toward rules, restrictions, and constraints.

Low Scorers: Apathetic, peaceable, serious, cautious, and unassuming; as being slow and deliberate in tempo; and as being overly conforming and conventional.

Flexibility

High-Scorers: Insightful, informal, adventurous, confident, humorous, rebellious, idealistic, assertive, and egoistic; as being sarcastic and cynical; and as highly concerned with personal pleasure and diversion.

Low Scorers: Deliberate, cautious, worrying, industrious, guarded, mannerly, methodical, and rigid; as being formal and pedantic in thought; and as being overly deferential to authority, custom, and tradition.

Femininity

High Scorers: Appreciative, patient, helpful, gentle, moderate, persevering, and sincere; as being respectful and accepting of others; and as behaving in a conscientious and sympathetic way.

Low Scorers: Outgoing, hard-headed, ambitious, masculine, active, robust, and restless; as being manipulative and opportunistic in dealing with others; blunt and direct in thinking and action; and impatient with delay, indecision, and reflection.

APPENDIX N

Tables 1, 2, 3, and 4 list the raw scores on the continuous variables of the successful and unsuccessful college level beginning shorthand and transcription students. The variables are keyed as follows:

Variable	
1	Wellesley spelling
2	Brown-Holtzman survey
3	Watson-Glaser
4	Number checking, MCT
5	Name checking, MCT
6	Dominance, CPI
7	Capacity for status, CPI
8	Sociability, CPI
9	Social presence, CPI
10	Self-acceptance, CPI
11	Sense of well-being, CPI
12	Responsibility, CPI
13	Socialization, CPI
14	Self-control, CPI
15	Tolerance, CPI
16	Good impression, CPI
17	Communality, CPI
18	Achievement via conformance, CPI
19	Achievement via independence, CPI
20	Intellectual efficiency, CPI
21	Psychological-mindedness, CPI
22	Flexibility, CPI
23	Femininity, CPI
24	Grade-point average
25	Typing accuracy (total number of errors)
26	Typing speed (gross)
27	Brief form test (percent)
28	Theory test (percent)
29	Reading test (percent)

Table 1. Raw Scores of the Successful College Level Beginning Shorthand Students

Student	Variable																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	27	28	29
1	40	36	57	141	156	36	19	32	50	27	31	26	27	13	13	09	28	26	13	35	11	07	17	2.33	099	85	095
2	38	47	82	096	122	35	22	27	38	24	41	37	41	35	25	21	26	32	24	42	11	17	25	2.89	098	81	097
3	40	37	67	163	152	34	23	31	44	26	33	26	34	19	18	13	26	28	20	40	10	09	23	2.17	100	55	097
4	36	45	69	121	117	27	19	27	32	23	41	36	46	39	30	25	27	30	28	47	13	14	21	3.57	100	73	098
5	37	40	59	133	145	26	18	27	33	24	39	35	45	32	20	17	28	28	16	33	09	07	27	2.80	099	77	097
6	37	36	69	099	099	34	24	27	31	27	36	34	42	30	24	15	25	27	21	38	06	05	26	2.71	099	77	097
7	34	38	66	125	146	28	21	29	35	19	41	35	45	40	25	25	28	34	21	42	10	05	29	2.41	099	74	098
8	42	29	67	133	150	22	23	25	40	24	39	25	41	23	20	10	26	22	21	38	07	11	22	1.85	100	69	099
9	45	37	61	181	175	17	12	14	25	16	39	34	32	37	18	22	25	26	16	28	11	10	24	2.43	098	88	099
10	40	44	63	115	135	30	24	30	47	27	39	31	30	24	25	17	25	32	25	43	10	08	23	2.73	099	62	097
11	27	42	86	134	140	38	24	30	44	27	38	32	43	28	20	16	27	33	18	42	10	10	19	2.96	095	57	096
12	35	43	70	131	125	25	20	24	29	22	38	37	41	32	26	26	25	29	19	43	10	13	24	3.48	100	93	098
13	32	21	68	164	132	34	20	31	43	24	33	30	31	13	16	07	28	24	13	40	06	14	09	2.40	099	32	094
14	45	35	72	134	186	25	23	25	45	26	36	29	42	28	23	11	27	23	17	43	12	12	23	3.10	100	75	098
15	45	23	59	171	195	23	13	21	34	22	24	30	31	09	09	05	27	11	12	29	06	09	26	2.55	098	83	099
16	31	47	59	124	139	27	23	29	38	22	37	34	41	33	19	20	28	31	16	41	10	05	22	3.50	098	96	099
17	31	15	63	133	124	22	16	22	31	23	23	32	41	10	08	09	28	25	10	22	05	04	25	2.22	097	31	089
18	36	51	71	193	195	37	23	25	34	22	38	38	44	33	28	26	25	35	21	40	13	06	28	3.65	100	87	100
19	28	45	71	180	156	20	22	25	40	22	39	30	36	27	28	11	26	26	23	47	10	16	23	2.91	099	55	098
20	33	36	70	126	112	23	17	26	41	22	34	29	34	23	28	11	28	28	25	41	10	14	22	2.36	097	65	098
21	43	48	81	147	121	32	16	27	33	21	40	39	44	30	27	16	28	33	25	43	11	09	23	3.43	100	79	099
22	39	21	70	127	134	25	25	23	39	21	37	29	35	27	17	15	26	23	21	39	11	12	19	2.10	100	48	097
23	42	34	65	121	159	22	20	24	43	19	40	32	38	31	22	18	26	29	20	44	11	10	19	2.60	098	67	100
24	36	27	81	109	106	19	12	16	33	16	35	33	45	29	24	13	28	23	20	38	12	10	22	2.50	099	57	099
25	14	26	56	098	093	27	19	29	30	23	33	27	38	26	21	16	20	23	15	32	14	07	24	1.53	087	12	085
26	34	21	56	122	103	11	13	18	32	19	37	30	41	33	23	13	27	23	19	37	07	06	24	2.36	098	35	094
27	40	27	88	107	161	24	22	24	36	22	33	31	33	31	26	19	23	22	23	47	11	16	27	2.40	100	65	098
28	35	35	80	166	169	21	11	18	28	19	35	32	45	24	12	08	28	23	14	29	07	06	28	2.68	100	93	099
29	33	26	63	118	101	18	20	14	34	19	24	28	35	13	20	08	25	18	25	35	12	17	23	3.05	098	46	097
30	36	24	61	115	136	24	21	26	35	22	33	27	39	17	23	09	27	25	17	32	07	08	22	3.02	092	54	097

Table 1. Raw Scores of the Successful College Level Beginning Shorthand Students (Continued)

Student	Variable																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	27	28	29
31	43	40	58	130	138	27	18	25	33	25	36	36	36	30	27	08	27	25	22	34	07	10	21	3.26	099	83	099
32	41	41	79	110	109	32	22	26	39	29	28	34	39	27	19	12	28	26	18	40	09	06	31	3.10	099	81	099
33	35	21	54	129	157	18	10	20	30	19	27	21	34	26	12	14	23	26	15	27	07	04	19	2.07	100	35	090
34	41	45	80	128	113	27	27	31	39	23	36	35	41	36	27	22	28	34	26	47	10	13	26	3.59	100	82	098
35	39	53	82	164	163	27	20	26	37	21	31	32	43	27	20	13	28	28	23	38	11	05	19	2.22	094	52	097
36	35	18	76	145	137	19	14	22	29	16	30	33	32	16	14	06	28	21	16	30	09	13	21	2.89	099	55	099
37	38	15	64	158	169	17	14	22	37	19	27	19	19	16	12	08	26	20	13	29	07	09	16	2.63	095	37	087
38	37	14	46	156	144	21	19	27	28	22	38	27	39	25	18	14	26	23	18	39	01	13	20	1.97	097	80	097
39	31	20	62	123	109	18	19	18	34	15	38	29	35	32	26	17	26	28	19	39	07	12	22	2.03	099	86	099
40	42	30	64	156	172	08	13	12	24	13	14	23	25	12	12	05	26	20	15	24	09	14	22	2.60	091	51	099
41	27	40	81	174	118	32	22	29	35	26	39	32	49	33	22	19	25	35	23	41	10	06	23	2.97	100	72	099
42	42	20	64	128	175	28	21	27	38	30	32	24	34	15	15	06	28	24	17	39	08	07	24	2.14	100	74	099
43	43	28	79	113	134	16	15	20	31	18	28	25	38	32	20	13	26	17	17	32	09	13	22	1.94	100	81	099
44	30	35	65	187	164	24	19	23	30	20	33	31	36	27	17	16	27	22	09	33	10	05	22	1.78	100	62	095
45	37	30	72	130	133	25	15	26	37	24	33	24	28	20	17	11	26	24	19	33	07	12	20	3.03	099	60	099
46	40	29	78	193	197	16	14	13	21	20	27	26	26	20	10	07	23	15	16	24	07	05	22	3.07	094	46	098
47	38	44	64	125	113	23	21	25	30	24	36	33	47	34	26	16	25	30	21	40	10	07	29	3.34	096	45	099
48	29	11	49	095	106	21	16	21	32	17	22	22	36	29	15	19	18	24	11	27	12	09	22	2.19	097	25	088
49	39	27	81	151	155	30	23	24	42	26	32	27	28	13	18	09	26	19	19	33	12	19	22	2.03	099	50	098
50	38	31	69	119	126	26	18	25	35	21	35	32	34	20	20	13	28	27	21	37	11	10	29	2.01	100	67	098
51	40	28	70	149	155	19	16	22	32	18	34	32	36	30	18	17	24	28	19	28	07	09	25	2.68	100	85	100
52	36	21	76	103	093	19	15	20	29	14	33	27	40	29	19	12	24	23	17	35	06	08	27	2.67	099	59	096
53	30	11	67	140	155	22	13	12	30	11	36	35	36	39	21	15	23	28	19	27	13	13	22	2.04	099	65	098
54	38	28	50	158	145	12	13	08	18	14	29	32	41	31	14	16	24	21	15	27	07	05	27	2.36	098	67	098
55	33	34	64	183	187	24	20	25	40	25	40	29	37	26	23	19	26	23	17	38	06	09	21	2.85	099	72	097
56	34	16	61	131	118	19	17	17	37	22	33	28	45	20	16	08	27	21	17	34	11	11	26	2.75	100	47	097
57	33	28	63	159	155	22	19	27	37	23	31	23	43	21	19	10	28	22	14	37	10	11	28	1.75	094	42	097
58	30	17	48	120	101	26	13	25	34	20	30	21	40	18	12	15	23	20	13	26	06	09	23	1.38	094	57	087
59	37	21	79	101	139	25	18	23	35	21	37	27	33	21	19	05	24	19	18	35	10	06	15	2.56	097	52	099
60	38	28	69	127	143	19	16	20	37	21	37	21	38	17	13	14	27	22	11	39	10	03	20	2.13	093	43	099

Table 4. Raw Scores of the Successful College Level Beginning Shorthand Students (Continued)

Student	Variable																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	27	28	29
61	34	18	73	100	104	15	18	25	28	18	32	22	24	19	14	12	24	14	18	35	10	12	20	2.37	098	73	097
62	23	30	61	160	130	13	16	16	23	15	29	23	40	28	09	11	26	19	09	20	06	14	26	2.20	100	67	099
63	39	25	64	164	155	24	20	21	39	20	33	28	41	22	23	09	25	22	19	42	09	11	19	2.68	099	81	100
64	37	43	72	150	155	24	18	22	26	17	41	36	45	43	22	24	26	30	19	37	09	06	23	2.85	100	60	098
65	45	38	69	144	170	31	20	24	36	22	36	37	39	35	23	17	26	30	23	39	08	10	24	3.01	100	86	100
66	36	23	79	109	110	17	19	21	29	18	26	24	31	18	15	07	27	15	20	28	09	10	21	2.03	100	70	099
67	32	15	67	083	100	22	15	22	30	22	35	23	33	22	19	13	27	19	15	28	07	13	14	2.51	100	63	099
68	38	17	58	124	130	26	15	26	29	19	22	29	36	27	18	18	24	24	19	31	06	09	29	2.81	097	91	100
69	45	44	86	137	133	20	20	17	29	16	38	40	42	33	28	12	26	26	26	42	17	12	28	2.86	099	90	100
70	44	39	74	141	197	31	21	32	37	24	33	35	43	30	23	19	27	30	23	45	14	08	29	2.87	099	77	100
71	36	42	71	108	154	26	20	24	33	21	40	34	35	33	22	22	28	26	24	39	11	12	26	2.53	100	89	100
72	38	30	66	103	169	18	18	19	29	15	37	24	38	29	16	16	20	23	20	43	08	12	22	3.00	096	87	097
73	36	38	82	086	127	29	22	29	41	23	37	32	48	32	27	23	24	28	24	42	12	20	23	2.73	095	81	099
74	31	15	67	095	143	25	15	21	33	23	17	18	21	10	08	04	27	17	12	17	06	13	22	2.18	099	83	099
75	36	46	71	108	158	26	20	24	36	22	40	36	39	39	25	22	26	29	22	37	11	12	21	2.47	100	96	100
76	42	36	82	123	198	20	14	18	24	18	31	34	46	25	21	10	24	24	20	34	08	04	28	2.76	100	85	100
77	37	49	64	126	174	39	22	31	40	26	44	37	45	34	26	26	28	35	21	45	13	06	25	2.14	098	94	100
78	34	39	73	128	175	33	24	28	40	20	39	35	41	38	26	25	26	30	21	41	12	12	18	2.33	099	77	099
79	42	23	59	119	192	17	14	16	26	21	29	27	31	24	13	08	23	21	15	29	06	12	26	2.46	099	86	098
80	37	33	50	111	160	27	19	25	40	20	40	31	38	30	29	17	25	25	24	41	12	13	25	2.31	098	85	100
81	21	27	62	099	146	21	16	17	30	20	31	27	29	15	16	08	28	16	13	28	05	06	23	2.58	095	70	097
82	32	32	67	111	174	25	17	21	36	20	34	26	35	21	17	10	28	23	13	31	05	09	20	2.29	090	81	095

Table 2. Raw Scores of the Unsuccessful College Level Beginning Shorthand Students

Student	Variable																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	27	28	29
1	38	10	56	186	155	19	12	18	27	17	18	21	30	12	08	08	24	14	09	22	08	07	20	1.94	081	09	082
2	43	17	61	140	139	12	12	17	25	13	36	29	41	31	17	20	26	27	18	32	07	11	16	1.76	099	79	094
3	29	15	63	097	094	16	11	11	22	15	33	24	37	23	11	12	26	14	09	11	05	09	16	1.86	096	09	098
4	23	09	36	118	106	28	15	26	33	26	21	27	23	24	14	18	13	19	12	30	12	09	23	1.15	091	04	068
5	39	31	72	155	152	32	23	30	39	26	32	23	25	07	21	07	27	16	20	35	08	13	18	1.70	078	21	076
6	36	16	64	148	148	32	13	28	36	20	31	12	33	11	12	09	25	17	15	33	09	13	20	1.96	088	07	051
7	31	17	56	109	117	19	15	19	32	23	22	23	29	15	10	07	26	12	19	25	07	13	22	1.41	096	34	077
8	25	10	58	103	076	19	18	21	37	22	31	23	37	19	17	13	24	16	15	33	03	16	25	1.00	083	10	081
9	35	30	63	114	140	22	18	25	39	22	34	28	32	21	11	14	20	21	17	37	10	11	18	1.92	091	17	056
10	35	25	64	122	105	26	21	23	36	20	39	33	39	31	24	18	26	21	20	40	10	10	23	1.26	100	35	097
11	19	26	53	126	099	28	18	26	39	28	26	18	29	12	13	07	21	22	12	24	09	06	20	1.20	079	01	016
12	25	26	47	135	120	19	17	26	26	17	36	24	39	22	16	15	24	26	16	27	05	11	26	1.94	094	41	090
13	28	27	67	113	118	24	14	23	43	21	37	33	33	29	27	09	27	20	22	39	09	10	22	1.43	032	10	005
14	22	16	61	123	109	20	12	14	20	12	31	26	40	34	23	16	23	24	21	26	06	13	23	1.55	095	41	094
15	26	27	56	105	110	20	15	19	25	16	36	23	37	36	18	21	27	21	17	31	09	08	24	1.82	097	12	093
16	36	23	63	148	165	23	20	29	40	26	28	24	30	17	10	07	26	21	13	30	05	09	24	2.05	074	35	069
17	24	21	73	100	072	27	21	24	39	24	36	25	33	24	21	16	26	25	18	36	11	04	20	1.74	083	24	056
18	41	22	81	114	125	19	18	17	37	17	30	22	27	19	19	12	21	17	24	37	11	18	21	2.67	098	60	098
19	40	39	69	084	100	26	21	26	32	19	42	32	43	41	30	29	26	30	21	43	11	10	28	2.72	063	14	077
20	37	35	67	119	125	29	20	28	46	26	30	16	21	11	19	10	19	17	17	38	08	14	18	1.29	084	00	005
21	33	24	72	192	157	24	18	25	33	19	28	24	34	27	20	16	26	22	17	30	09	06	27	1.74	084	10	075
22	30	24	52	148	144	19	15	21	37	20	30	24	37	20	12	10	27	20	13	30	06	14	23	0.46	061	15	034
23	29	37	57	161	123	23	16	20	31	19	37	31	41	31	20	15	21	27	21	26	13	07	19	2.03	083	07	005
24	32	35	63	111	101	35	23	32	37	23	40	32	40	35	26	28	27	34	19	43	10	06	16	1.17	058	04	069
25	31	28	63	121	123	24	17	27	44	27	35	29	25	14	19	11	28	18	17	33	10	09	21	0.53	099	08	073
26	31	28	54	082	055	17	08	16	30	21	31	26	44	21	12	05	27	16	15	24	08	10	28	1.89	083	25	090
27	27	31	75	108	139	25	21	28	43	20	39	27	38	34	26	16	28	24	23	43	08	15	19	2.05	096	20	096
28	32	12	44	159	129	32	19	21	35	20	32	25	43	15	14	07	26	25	15	29	09	12	27	1.61	063	04	056
29	29	15	69	113	114	14	09	16	23	17	23	29	35	24	17	10	24	19	16	23	06	14	23	1.80	097	32	090
30	29	45	66	146	124	33	23	30	46	26	36	30	33	26	25	21	23	28	25	43	10	17	20	1.00	099	67	097
31	17	17	55	130	123	23	19	28	41	22	34	32	45	30	22	18	26	25	18	35	06	06	24	1.05	100	21	089

Table 2. Raw Scores of the Unsuccessful College Level Beginning Shorthand Students (Continued)

Student	Variable																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	27	28	29
32	29	20	59	150	102	38	20	26	41	28	35	28	43	14	13	13	28	27	13	32	07	07	25	0.14	071	36	061
33	26	22	64	185	132	25	14	21	36	19	31	33	38	19	12	08	26	21	14	31	04	16	23	1.36	097	64	093
34	26	23	56	100	099	23	14	19	28	20	34	32	30	16	22	08	26	20	19	34	10	14	27	0.60	099	52	097
35	36	32	67	103	128	34	26	30	46	28	38	29	34	18	23	15	26	25	20	42	11	16	19	0.69	080	49	096
36	33	17	71	130	115	16	15	10	29	16	32	20	35	25	16	10	28	14	17	20	07	13	20	1.46	081	45	089
37	35	24	56	121	106	33	15	28	39	21	29	29	36	12	15	10	24	18	14	33	08	04	23	0.37	082	44	093
38	21	26	56	156	129	26	17	25	35	18	40	27	37	34	21	25	25	26	17	33	10	07	24	1.50	089	39	092
39	36	19	56	143	147	20	14	30	41	18	34	27	38	24	14	13	27	20	14	41	10	10	20	1.84	082	48	065
40	24	17	60	148	107	27	18	32	33	28	17	24	36	10	10	05	27	21	12	25	06	05	24	0.50	069	51	070
41	21	32	57	127	099	14	17	26	36	26	23	23	25	23	19	11	13	25	20	18	04	02	20	1.60	100	80	097
42	26	20	63	137	121	17	12	15	29	17	26	27	34	14	13	06	27	17	14	23	08	15	23	2.00	099	89	097
43	33	35	67	140	135	19	16	24	33	22	35	25	41	23	18	11	27	30	21	36	09	11	21	1.91	100	37	087
44	25	24	67	135	111	20	17	22	29	23	30	32	39	28	26	17	24	27	19	34	06	10	24	0.80	092	35	096
45	29	17	67	131	136	26	23	20	30	17	39	36	41	29	28	18	23	24	22	34	11	16	23	1.17	066	12	014
46	31	23	44	140	126	23	13	20	25	17	42	35	47	41	24	23	25	25	14	36	08	10	21	1.16	093	38	045
47	38	18	71	111	124	14	12	19	18	19	18	34	28	31	21	12	15	23	16	21	06	09	28	1.89	097	60	096
48	32	37	58	126	160	18	19	31	44	21	38	31	39	22	24	11	26	26	19	42	07	08	24	1.51	100	46	097
49	28	22	63	122	111	24	18	24	29	22	36	26	31	27	24	21	26	25	24	33	09	10	16	2.00	100	53	097
50	23	23	57	149	107	14	07	17	27	17	23	23	30	12	08	05	27	17	10	24	06	04	20	0.92	032	16	057
51	20	35	55	117	108	29	16	22	22	19	37	26	42	40	17	30	23	29	16	34	11	07	29	0.50	093	22	060
52	41	28	64	134	165	22	13	18	23	23	31	36	40	30	19	19	25	24	18	37	08	04	22	1.46	097	53	098
53	36	32	64	104	140	23	24	31	42	27	33	28	39	15	16	07	28	24	21	37	04	11	20	2.01	097	49	097
54	32	36	71	111	115	14	11	17	34	20	26	20	23	20	13	02	23	15	16	33	04	13	23	1.90	090	39	092
55	37	10	72	101	143	23	21	19	38	17	21	18	13	11	12	08	25	12	16	25	08	17	19	1.90	081	51	080
56	23	12	60	120	107	18	15	21	39	26	21	29	23	21	17	07	14	22	22	21	12	10	25	2.51	100	34	087
57	39	43	69	109	194	25	17	28	40	24	37	31	43	35	22	20	26	32	19	39	10	03	23	2.15	092	70	100
58	32	12	64	132	189	32	26	23	34	19	30	29	35	18	22	19	25	30	15	36	10	13	24	1.86	096	27	069
59	32	20	73	113	160	29	17	29	43	21	31	21	25	13	18	09	26	16	16	36	10	15	23	1.03	091	62	100
60	27	28	55	074	100	23	19	20	24	13	41	33	44	37	21	21	26	25	15	34	07	05	29	0.90	100	61	067
61	25	20	72	089	119	27	17	23	29	25	25	28	29	19	22	09	26	20	17	34	09	13	22	2.03	098	57	098

Table 3. Raw Scores of the Successful College Level Transcription Students

Student	Variable																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	43	37	64	122	116	29	21	33	37	23	33	28	36	20	26	12	28	27	18	39	12	13	23	1.95	06	70
2	40	32	64	110	129	21	24	24	35	23	42	33	38	37	26	23	26	28	23	38	13	11	22	2.51	02	76
3	43	41	86	119	140	22	21	26	35	26	35	30	39	30	23	12	28	25	18	43	10	06	25	3.77	01	72
4	40	31	66	130	145	13	12	16	28	16	28	25	32	18	11	06	23	20	14	30	05	05	18	2.33	02	59
5	38	15	64	124	135	20	13	17	31	17	08	25	24	09	10	06	17	11	09	20	01	05	21	2.79	00	75
6	40	30	62	139	183	21	13	12	24	13	39	32	41	32	18	20	27	25	18	33	07	07	29	3.45	02	56
7	34	33	79	092	111	15	16	21	33	20	32	31	29	25	23	10	25	25	20	42	09	10	21	2.39	04	59
8	38	27	79	116	140	16	16	18	27	19	40	30	42	33	20	12	28	29	17	38	07	08	26	3.00	02	66
9	36	33	78	144	160	17	15	19	28	21	37	28	44	28	17	15	27	23	15	34	05	08	28	3.21	05	72
10	47	34	68	137	165	20	16	21	39	22	38	32	35	24	20	15	27	27	20	37	12	16	23	3.65	04	77
11	39	30	69	100	129	35	19	27	39	28	36	31	43	29	20	21	26	28	16	39	10	08	26	2.88	07	82
12	41	51	80	164	124	28	20	26	32	21	38	33	40	27	17	17	26	31	20	35	08	05	19	3.02	04	64
13	43	25	75	194	188	19	19	25	39	22	30	27	36	21	11	09	26	22	12	32	07	05	25	2.82	03	91
14	35	21	64	129	112	22	20	26	39	22	37	32	42	36	25	18	26	31	21	38	10	09	24	2.89	08	77
15	36	38	79	139	132	31	21	25	38	26	34	31	39	26	19	15	26	26	16	39	10	05	26	3.15	08	71
16	40	43	71	140	126	37	20	28	40	23	38	33	41	25	26	17	27	24	24	41	11	14	16	3.47	02	66
17	42	36	69	119	141	25	16	18	27	22	31	31	39	30	17	14	28	30	17	32	10	07	22	3.12	07	64
18	42	38	73	137	145	24	22	21	39	23	43	33	42	26	27	13	27	23	26	42	09	16	25	3.42	08	66
19	40	40	83	150	144	31	22	29	39	23	31	27	30	19	21	13	27	27	19	42	08	15	15	2.86	04	61
20	37	17	67	118	142	21	16	22	36	21	34	30	34	18	21	04	26	20	17	33	10	09	23	2.53	07	54
21	41	30	78	144	166	21	15	15	25	17	31	20	40	30	17	13	26	27	21	30	11	10	25	3.04	03	71
22	38	38	71	132	155	33	26	31	47	27	37	31	33	25	28	16	26	25	23	44	10	13	22	2.52	03	82
23	35	07	62	135	119	17	15	16	27	18	26	30	42	20	11	09	27	19	15	29	07	08	28	2.78	07	77
24	31	26	70	144	174	22	17	23	34	17	27	25	38	23	12	10	27	17	15	30	05	09	26	2.27	03	68
25	46	33	71	118	150	20	17	17	30	15	36	36	35	23	22	10	27	22	21	36	11	11	20	3.17	03	68
26	42	33	67	116	138	35	24	31	42	26	37	28	41	27	23	16	28	28	22	42	06	11	16	3.03	11	65
27	39	33	83	124	109	22	22	24	37	25	35	28	41	25	24	12	28	30	18	37	09	07	21	2.81	10	64
28	35	45	62	168	163	22	20	20	32	21	37	31	44	26	20	13	27	28	18	35	10	06	25	2.69	03	63
29	34	37	81	109	092	29	20	21	38	21	34	34	42	28	22	18	27	28	23	39	14	14	20	2.50	02	76
30	36	36	83	125	134	32	22	24	32	24	35	37	33	30	24	12	27	23	22	40	13	13	29	2.45	06	61

Table 3. Raw Scores of the Successful College Level Transcription Students (Continued)

Student	Variable																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
31	41	16	66	149	149	31	22	26	38	26	37	29	46	24	18	09	28	23	14	35	09	08	25	2.58	01	78
32	49	44	93	157	199	28	26	28	35	21	43	38	38	40	30	23	26	35	26	47	14	15	28	2.89	02	64
33	36	17	66	162	155	23	17	23	30	26	30	22	44	22	15	12	27	23	10	24	05	10	27	2.24	03	66
34	38	29	63	117	128	13	11	15	24	19	35	30	47	28	16	13	28	24	17	30	05	05	27	3.65	04	61
35	34	21	65	095	092	17	13	14	25	18	30	33	47	29	17	10	28	19	18	23	06	09	27	3.62	03	65
36	40	25	70	136	149	25	16	22	32	17	40	34	46	37	27	14	28	32	25	43	08	07	26	2.75	04	78
37	39	23	67	142	152	22	21	28	40	21	36	29	38	25	21	08	27	21	20	34	08	11	25	3.00	04	70
38	38	40	71	100	134	13	13	24	34	13	32	29	39	27	19	13	27	24	14	30	09	07	27	3.23	05	70
39	43	28	65	109	125	12	18	16	30	15	37	29	41	35	25	20	24	27	19	33	07	05	22	2.73	02	75
40	43	44	61	139	138	24	11	21	27	21	41	27	39	38	20	18	27	32	19	36	09	07	27	3.24	01	84
41	42	33	68	110	134	22	18	20	24	22	33	31	40	26	20	10	28	26	20	36	06	06	26	3.18	02	63
42	34	30	61	102	105	24	15	24	31	24	34	28	36	28	15	18	25	26	18	31	09	13	22	1.74	06	69
43	40	17	54	152	168	19	13	17	33	23	24	28	30	14	11	04	26	23	17	25	07	15	21	2.72	05	82
44	41	08	67	109	109	16	17	25	43	22	22	18	23	09	13	11	26	13	16	27	04	15	24	1.92	03	58
45	29	25	67	134	124	24	21	24	39	22	33	34	36	21	21	15	28	22	16	37	09	11	25	2.40	03	74
46	37	24	66	120	123	23	14	28	38	22	34	30	40	25	17	13	27	23	19	35	09	11	25	2.40	04	75
47	44	28	76	135	156	27	20	25	37	19	34	25	39	24	20	19	28	21	14	36	11	14	20	2.76	07	61
48	39	47	86	166	187	27	20	29	43	25	42	36	40	38	29	22	28	32	23	44	13	12	19	2.69	07	78
49	39	35	78	148	133	15	18	14	21	17	27	23	36	26	16	06	27	23	20	31	07	11	34	4.00	00	81
50	44	22	74	157	190	14	15	15	21	11	35	31	36	38	23	15	26	28	24	34	10	12	23	3.60	02	75
51	39	16	58	139	163	18	16	21	27	23	22	24	34	16	13	09	28	24	15	25	03	10	25	3.02	06	86
52	39	32	59	134	119	15	13	13	19	16	35	32	45	32	13	14	22	23	14	30	05	07	27	2.86	02	68
53	31	38	58	117	123	30	20	26	29	18	41	37	35	39	25	28	27	25	20	35	10	09	21	2.31	04	75
54	42	36	64	198	180	18	17	17	21	13	34	30	42	32	21	20	27	23	19	29	09	06	25	2.41	03	76
55	40	51	72	148	165	24	20	31	36	22	39	31	44	36	25	18	28	35	21	42	09	09	20	3.00	02	78
56	41	35	87	137	151	34	19	27	32	24	32	31	43	25	19	09	28	29	21	38	11	11	25	2.10	01	72
57	40	25	64	095	110	22	16	24	34	24	32	30	38	24	19	11	25	17	21	31	10	13	24	2.33	07	58
58	43	37	72	181	195	27	18	18	35	18	30	33	42	21	17	05	28	19	16	33	12	07	20	2.50	03	56
59	45	38	68	173	193	25	16	20	31	22	17	25	26	15	11	07	21	19	14	25	13	07	26	3.13	06	72
60	37	47	74	137	163	22	14	19	28	22	34	27	45	31	17	13	26	25	17	33	08	04	23	3.10	05	57

Table 3. Raw Scores of the Successful College Level Transcription Students (Continued)

Student	Variable																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
61	40	29	68	131	137	23	17	16	28	20	30	27	29	16	16	10	25	15	13	26	05	08	22	2.75	03	65
62	43	44	52	143	163	34	21	26	26	24	42	38	43	43	26	27	28	35	22	41	13	08	27	2.74	05	73
63	38	40	67	119	157	26	18	28	36	23	37	30	41	29	23	11	28	33	15	34	09	10	25	2.54	02	63
64	41	47	74	160	179	34	25	31	37	22	40	35	34	38	28	24	27	32	21	43	12	09	25	2.31	04	63
65	42	28	67	151	128	17	16	15	28	19	32	23	32	14	16	04	22	22	20	34	08	09	23	2.68	02	78
66	38	41	74	142	138	27	16	17	24	18	38	38	48	41	24	24	27	33	18	33	13	06	25	3.35	05	66
67	39	44	75	148	128	22	15	16	27	19	36	32	44	24	14	06	28	24	17	33	10	08	23	3.04	02	76

Table 4. Raw Scores of the Unsuccessful College Level Transcription Students

Student	Variable																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	28	25	50	123	120	30	15	24	33	25	27	22	39	20	13	15	27	22	11	30	04	07	20	1.81	06	55
2	32	32	54	138	149	26	21	28	38	22	42	30	43	37	24	29	27	33	17	39	10	09	20	2.20	04	53
3	36	29	68	132	144	14	13	21	37	22	34	19	37	23	14	12	21	20	16	32	05	13	24	2 32	15	47
4	25	36	77	136	127	26	17	21	33	23	36	31	45	32	26	19	28	26	14	38	13	05	31	2.13	04	63
5	26	28	76	111	107	27	21	22	29	20	31	29	36	21	18	14	26	27	18	36	08	12	19	2.20	10	41
6	41	22	66	080	110	21	18	25	37	21	37	27	43	27	21	08	27	26	16	40	09	07	25	2.40	05	74
7	41	10	69	162	160	17	14	18	36	12	30	23	38	20	12	05	27	15	14	33	06	16	20	1.85	04	61
8	39	29	68	140	169	33	18	28	43	23	38	33	38	29	26	16	26	30	21	38	15	13	20	2.05	03	78
9	42	18	63	164	155	19	19	24	44	22	32	22	33	15	16	07	27	15	17	31	07	18	21	2.14	07	85
10	36	41	70	132	156	32	19	28	31	19	42	34	43	42	27	30	24	31	23	38	11	06	25	2.09	07	65
11	29	39	65	099	097	25	25	30	42	23	42	33	39	39	30	23	27	33	26	44	14	13	23	2.44	06	81
12	37	35	73	107	119	17	22	26	38	23	25	25	32	29	24	16	11	25	19	31	07	12	21	2.09	08	62
13	32	40	76	111	139	20	23	24	38	24	42	34	43	30	26	20	26	31	27	40	11	13	23	2.05	12	71
14	40	41	71	122	135	18	22	26	45	23	42	29	36	32	25	15	27	28	24	47	12	08	17	2.69	02	81
15	30	15	56	133	127	23	19	24	32	23	35	31	43	25	22	13	28	21	17	34	10	10	30	2.72	04	65
16	41	23	55	144	136	20	11	11	29	19	30	26	38	14	09	04	28	14	11	26	08	09	24	1.87	06	63
17	32	18	65	145	151	33	18	22	32	25	30	24	36	17	11	10	28	21	13	27	10	08	22	2.11	04	52
18	39	22	47	105	164	27	19	20	35	28	32	28	43	22	15	13	25	25	14	34	08	04	28	1.90	06	62
19	38	25	77	130	138	30	11	26	33	26	32	31	35	20	21	06	27	25	19	34	08	08	22	2.97	07	67
20	39	28	74	147	134	27	16	25	35	20	31	31	42	22	18	08	28	24	17	38	10	08	28	2.81	07	52
21	29	38	75	101	110	31	24	29	39	25	40	29	42	27	25	13	23	23	19	40	10	11	24	2.65	08	70
22	30	34	66	165	158	23	18	22	38	19	38	31	43	27	26	12	26	28	22	42	13	12	26	2.55	01	66
23	32	24	73	147	150	16	19	18	33	17	29	32	38	29	20	12	26	23	19	31	09	09	26	1.95	07	60
24	36	17	59	138	127	21	12	23	37	22	32	29	39	18	13	08	27	20	14	33	05	09	24	1.58	13	66
25	40	15	65	162	165	28	15	25	37	23	24	21	39	14	10	04	24	20	12	29	06	10	25	0.98	04	56
26	34	30	70	137	143	33	24	26	27	26	41	36	35	34	26	16	27	30	23	34	12	03	27	2.78	03	66
27	42	32	57	124	171	24	15	23	31	23	31	31	33	23	20	11	22	25	21	31	10	10	25	1.78	10	53
28	32	33	59	146	140	19	17	24	31	25	31	31	33	30	18	19	25	25	18	38	08	06	28	2.00	02	56
29	29	32	81	142	130	19	12	17	34	16	32	30	37	19	20	08	27	20	21	35	09	17	27	3.24	00	75
30	41	19	65	094	119	22	16	25	37	24	17	17	33	14	08	09	25	19	20	31	05	11	23	1.96	05	58
31	39	14	56	189	193	23	14	21	37	21	29	28	42	18	09	08	25	18	11	29	07	10	26	1.43	03	63
32	23	30	74	082	089	37	21	26	37	26	25	29	40	20	16	11	27	25	14	36	08	12	24	1.84	12	65

Table 4. Raw Scores of the Unsuccessful College Level Transcription Students (Continued)

Student	Variable 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
33	34	39	76	100	116	37	26	28	38	27	37	34	44	29	25	17	28	28	22	34	07	06	24	2.26	04	65
34	32	08	48	147	127	13	06	11	17	16	18	25	37	21	08	11	22	23	09	18	05	03	25	1.50	13	74
35	34	31	68	102	115	20	22	25	38	18	34	29	40	27	22	18	27	25	19	40	10	11	21	2.02	03	63
36	28	21	52	139	139	24	18	22	27	18	22	26	25	18	09	17	23	15	14	26	06	02	20	1.71	06	57
37	35	21	73	139	170	21	22	21	36	24	37	31	39	36	23	20	25	29	25	34	12	10	17	2.04	05	82
38	28	35	39	116	135	21	18	23	32	20	35	26	40	28	22	21	26	25	18	30	09	12	26	0.91	07	60
39	41	25	86	138	159	19	17	25	40	23	39	30	37	29	25	14	27	23	22	40	08	13	19	2.01	07	61
40	31	27	71	134	151	21	14	15	26	18	31	30	34	21	19	12	27	24	16	30	05	10	22	1.80	03	52
41	36	31	64	185	168	16	17	19	30	15	42	34	48	42	25	28	26	30	22	39	10	09	22	1.20	02	61
42	43	17	70	143	144	25	15	25	37	19	37	31	40	24	23	19	27	23	15	34	07	08	25	0.49	02	92
43	39	48	87	131	132	30	20	28	42	24	41	36	41	31	27	25	27	32	25	43	13	08	26	2.00	04	63
44	29	35	86	118	116	36	22	30	41	27	35	32	41	30	25	18	28	35	21	40	09	13	22	2.05	05	66
45	34	23	56	119	103	22	12	15	35	19	28	25	38	24	19	09	28	16	14	31	06	10	21	0.70	05	58
46	28	30	68	125	125	26	19	23	28	19	41	32	48	39	23	20	27	27	18	37	12	06	25	2.00	03	58
47	42	43	76	123	121	17	14	15	28	21	35	32	46	33	16	10	27	27	20	38	09	04	21	1.51	02	63
48	27	33	55	136	136	18	08	18	20	18	35	29	36	31	14	18	26	22	16	28	05	10	26	1.90	00	52
49	39	44	74	146	156	22	13	19	28	17	42	37	49	32	24	15	27	24	15	31	05	03	28	1.51	12	59
50	32	29	64	121	117	18	16	14	31	16	36	32	46	36	13	17	26	25	16	34	06	08	22	1.50	07	49
51	37	32	63	115	153	36	23	30	35	26	39	36	44	37	24	26	27	33	18	38	09	07	24	2.61	03	76
52	28	25	64	164	160	18	11	25	35	23	31	21	36	21	23	12	25	20	17	37	07	06	19	0.70	07	55
53	34	40	62	154	165	25	19	24	41	18	35	30	38	18	20	07	27	25	19	42	08	10	21	2.20	02	63
54	27	45	70	123	135	27	14	25	30	18	36	32	37	32	22	20	27	32	19	39	12	02	27	1.87	08	47
55	39	32	67	140	115	20	20	28	32	25	30	26	33	24	14	13	28	25	16	39	11	02	25	2.00	01	51
56	33	28	67	131	144	25	19	24	37	26	37	28	43	30	19	15	27	25	18	37	10	06	19	2.00	03	72
57	38	38	58	154	140	18	12	26	29	12	40	28	36	34	20	17	23	29	17	36	10	07	18	2.00	02	63
58	35	40	54	189	172	24	21	20	34	15	37	30	33	40	27	25	23	23	25	37	16	17	27	2.48	02	66
59	43	44	62	180	192	27	16	26	33	22	37	34	40	28	27	16	26	26	21	43	13	09	24	2.93	07	74
60	41	37	76	126	102	26	14	16	26	21	33	33	42	35	20	15	26	32	18	33	11	07	31	2.45	05	66
61	30	38	72	076	070	36	25	32	33	24	35	34	42	20	18	15	27	25	14	33	11	09	25	2.25	03	55
62	35	47	65	145	143	22	22	29	30	25	33	31	33	22	16	14	26	24	11	34	09	07	29	2.05	03	62
63	22	40	57	122	107	32	25	27	30	24	39	34	47	35	25	23	27	31	18	38	13	06	24	0.06	04	56
64	35	29	52	158	156	16	13	19	37	18	28	23	41	24	13	11	27	23	13	25	06	08	26	2.07	20	83

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