July 31, 1979

To the Graduate Council:

I am submitting herewith a dissertation written by Bonnie Jean Roe White entitled "Analyses of Gregg Diamond Jubilee Shorthand and South-Western Century 21 Shorthand." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Vocational-Technical Education.

George A. Wagoner, Major Professor

We have read this dissertation
and recommend its acceptance:

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ANALYSES OF GREGG DIAMOND JUBILEE SHORTHAND AND SOUTH-WESTERN CENTURY 21 SHORTHAND

A Dissertation

Presented for the

Doctor of Education

Degree

The University of Tennessee, Knoxville

Bonnie Jean Roe White

August 1979

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ABSTRACT

This study compared the descriptive characteristics and memory load of Gregg Diamond Jubilee shorthand and South-Western Century 21 shorthand. The systems were compared by the identical, similar, and unique descriptive characteristics. The memory loads were compared using high-frequency words, running shorthand-countable words, and the textbook usage of high-frequency words.

Memory load was determined by decision points--any facet in the construction of the shorthand outline that requires knowledge beyond the shorthand alphabet letters (single-letter vowel, consonant, and consonant digraph symbols) to construct a dictionary-correct outline.

The first 1,000 high-frequency Mellinger words were analyzed on two levels: methods of writing and textually declared and undeclared principles. Each level was described by frequency, syllabic intensity, and stroke count. Overall shorthand stroke averages were determined at the 100-, 500-, and 1,000-word groups. Usage models were developed from weighted Mellinger frequencies for the 100-, 500-, and 1,000-word groups. Three thousand shorthand-countable words were analyzed using the format followed in the 1,000 high-frequency word analysis.

The shorthand-countable words of the college-level beginning shorthand textbooks of the two systems were keypunched onto computer cards. A computer program accumulated three tallies: presented words, connected-copy words, and total-copy words. The place of word introductions and points of word introductions (word numbers) were recorded. A ratio for the points of introductions was established for each of the 1,000 words, and the results were reported by probability levels. The relationship

of textbook usage to business usage of the 1,000 Mellinger words was determined by absolute percentage deviations from adjusted Mellinger frequencies.

Based on the findings of this study, the following conclusions related to the statement of the problem were made:

1. The knowledge of one shorthand system (Gregg DJ or SW Century 21) contributes substantially to the acquisition of knowledge in the other system as reflected in similarities of memory words, shorthand alphabetic components, and textually declared and undeclared principles.

2. Within the first 1,000 Mellinger words, the memory load as defined in this study is lower for SW Century 21 shorthand than for Gregg DJ shorthand. The lower memory load is accomplished without an increase in the average shorthand stroke count.

3. Within the 3,000 running shorthand-countable words, the memory load as defined in this study is lower for SW Century 21 shorthand than for Gregg DJ shorthand. The lower memory load is accomplished without an increase in the average shorthand stroke count.

4. The SW Century 21 beginning college-level shorthand textbook provides better utilization of the entire 1,000 Mellinger word list than does the Gregg DJ beginning college-level shorthand textbook. Of those words from the Mellinger list that appear in the textbooks of the two systems, however, no distinguishable differences occur in their textbook use.

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CHAPTER I

INTRODUCTION

Shorthand is a method of writing rapidly and legibly through the substitution of characters, abbreviations, or symbols for conventional letters, words, or phrases. Although shorthand has been used for modern business purposes a relatively short time, it has been used for non-business purposes for over two thousand years. Marcus Tullius Tiro, a Roman freedman and secretary to Cicero, developed a system known as Notae Tironianae. It gained wide usage in ancient Rome and was written for several centuries. The Tironian system reached its greatest development during the Christian persecutions. During the Middle Ages, however, shorthand was almost entirely neglected.

The introduction of the first modern shorthand system is generally credited to Dr. Timothy Bright during the Elizabethan Renaissance period. His Characterie: An Arte of Shorte, Swifte, and Secret Writing by Character was printed in London in 1588. Shortly thereafter, John Willis published The Arte of Stenographie (1602), which introduced the first shorthand alphabet.[1] Since that time, many shorthand systems have been introduced. An 1893 U. S. Bureau of Education report listed over six hundred systems and textbook authors for the period 1588 to 1891. John Robert Gregg's 1888 shorthand system was listed, although it had not yet been introduced to the United States.[2]

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[1]Collier's Encyclopedia, 1976 ed., s.v. "Shorthand," by Caleb W. Davis.

[2]George A. Wagoner, "Gregg Shorthand Revisions and Related Research," Business Education World 54 (December 1975):18.

The most prominent and widely used system in the United States today is Gregg shorthand. Gregg shorthand experienced rapid growth in the early 1900's as a result of factors such as continuous speed-test winners, free publications to teachers, and speakers for association meetings. This growth was sustained by a willingness to seek better methods of teaching the system and to make system revisions based upon research and upon demand by the users.[3] By 1916, the system contained nearly nine hundred brief forms, abbreviating devices, and principles. This trend was reversed in the three revisions of 1929, 1949, and 1963, which sought to reduce the memory load of the system.[4]

In 1974 South-Western Century 21 shorthand was introduced. Its introduction was preceded by over fifteen years of research, five years of field testing, and computer-controlled development of learning materials. Promoters of South-Western Century 21 shorthand stated that the system was developed to reduce learning difficulties and to speed acquisition of shorthand skill:

> Specifically, these shortcomings of other systems have been overcome in CENTURY 21: inconsistency of writing direction and outline construction; excessive memory load resulting from choice of symbol and writing direction; lack of a consistent phonetic guideline; lack of a credible research base; and lack of a control system that would assure recurrence of essential learning elements.[5]

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[3]Hamden L. Forkner and Ron C. DeYoung, "A Historical Development of Shorthand," Business Education Yesterday, Today, and Tomorrow, National Business Education Yearbook No. 14 (Reston, Va.: National Business Education Association 1976), pp. 96-98.

[4]John Robert Gregg, Louis A. Leslie, and Charles E. Zoubek, Gregg Shorthand--A Presentation of System Changes (New York: Gregg Publishing Division, McGraw-Hill Book Co., 1963), p. vii.

[5]"Century 21 Shorthand Forum...Questions and Answers," Balance Sheet 56 (April 1976):309.

The present study investigated the memory loads of Gregg Diamond Jubilee shorthand and South-Western Century 21 shorthand.

A. STATEMENT OF THE PROBLEM

The problem of this study was to compare the descriptive characteristics and memory load of Gregg Diamond Jubilee shorthand and South-Western Century 21 shorthand. The systems were compared by the identical, similar, and unique descriptive characteristics. The memory loads were compared using high-frequency words, running shorthand-countable words, and the textbook usage of high-frequency words.

B. ANALYSIS OF THE PROBLEM

To provide the framework for assessing the memory loads of Gregg Diamond Jubilee shorthand and South-Western Century 21 shorthand, descriptive characteristics of the systems were identified and compared:

A. Shorthand alphabets

B. Memory forms

C. Abbreviated/contracted words

D. Textually declared principles: blends and bends; consonants; vowels; word beginnings, disjoined and joined; word endings; disjoined and joined; miscellaneous; joinings; and auxiliary

E. Textually undeclared principles

F. Writing precision and accuracy guidelines

The memory loads of Gregg Diamond Jubilee shorthand and South-Western Century 21 shorthand were compared under three conditions: Mellinger's 1,000 most frequently used words; 3,000 running shorthand-countable words; and textbook usage of Mellinger's 1,000 most frequently used words. The systems were compared on the following points:

A. Mellinger's 1,000 Most Frequently Used Words
   1. Methods of writing (alphabetic words, abbreviated/contracted words, memory forms, shorthand theory words)
      a. frequency
      b. syllabic intensity
      c. stroke count
   2. Textually declared and undeclared principles
      a. frequency
      b. syllabic intensity
      c. stroke count
   3. Overall stroke count by syllabic intensity
   4. Mellinger frequencies and percentages distribution

B. 3,000 Running Shorthand-Countable Words
   1. Methods of writing
      a. frequency
      b. syllabic intensity
      c. stroke count
   2. Textually declared and undeclared principles
      a. frequency
      b. syllabic intensity
      c. stroke count
   3. Overall stroke count by syllabic intensity

C. Textbook Usage of Mellinger's 1,000 Most Frequently Used Words

1. Mellinger words listed and used
    a. cumulative high-frequency word groupings
    b. methods of writing
    c. textually declared and undeclared principles
2. Places of word introductions (presented or connected-copy)
    a. cumulative high-frequency word groupings
    b. methods of writing
    c. textually declared and undeclared principles
3. Frequency of occurrences
    a. connected copy
    b. presented words
    c. total copy
4. Average points of word introductions (total-copy word number)
    a. 1,000 words
    b. nonoccurrence words omitted
5. Absolute percentage deviations from adjusted Mellinger percentages
    a. 1,000 words
    b. nonoccurrence words omitted

C. IMPORTANCE OF THE STUDY

Streamlined shorthand courses, high dropout and failure rates, as well as low student achievement have been concerns of shorthand teachers for years. Teachers are further concerned with a potential drop in shorthand enrollments as a result of an overall drop in total school enrollments.

Conover and Daggett reported that total school enrollments peaked in 1975-76 with 15.6 million students. During 1976-1983 school enrollments are anticipated to decrease to 13.1 million, nearly an 18 percent decline. Thus, an 18 percent loss in enrollments in business education courses may be expected if the same proportion of enrollments continues. The employment opportunities figures for the same approximate time period, however, show a 60.8 percent increase in the demand for steno/secretaries.[6]

Inability to hold enrollments versus increased demands for qualified personnel presents a dilemma:

> At the present time, approximately 140,000 persons are graduated annually from secondary and postsecondary schools who have completed occupational preparations for secretarial careers. Considerable effort must be devoted to expanding these enrollments if the needs of business are to be met. Unfortunately, the trend in recent years has been in the opposite direction.[7]

Pressure has been exerted to reduce the time available for shorthand instruction. Previously, most shorthand courses were taught on a two-year basis, whereas today the trend is toward reducing the time to develop shorthand skill to one year. As early as 1960, Tonne observed:

> Shorthand is now taught annually to well over one-half million students and only something between a quarter to a seventh of these students take two years of shorthand. The pressure of the solids toward taking over more of the high school curriculum undoubtedly is having its influence upon enrollments in shorthand.[8]

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[6]Hobart H. Conover and Willard R. Daggett, "Business Education--The Changing Tide," The Balance Sheet 58 (September 1976):16-17.

[7]Ibid., p. 41.

[8]Herbert A. Tonne, "The Present and Future of Shorthand," Business Education Forum 15 (October 1960):11.

From a survey of shorthand and transcription authorities, Rahe reported a trend toward teaching more shorthand in less time.[9] Articles have appeared in the literature describing procedures for teaching shorthand in a one-year time frame, and courses have been developed for the senior student who finds it desirable to take a shorthand course before graduation. This telescoped time frame requires efficiency in teaching methods and materials.

In addition to the problem of limited instructional time, concern has been voiced about shorthand failure rates. Shorthand has had one of the higher dropout rates among high school subjects. Between the first and second year, dropout rates from 30 to 50 percent have been reported.[10] Lambrecht reported that over two hundred studies have been conducted since 1912 to determine factors leading to success or failure in shorthand. The majority of these studies was prompted by large dropout numbers in beginning shorthand. Some of these studies reported dropout rates as high as 50 to 70 percent from the first semester to the last semester of instruction.[11]

Forkner and DeYoung reported that only 39 percent of first-year shorthand students enroll in second-year shorthand. Fifteen states were listed as having less than 25 percent of their first-year enrollment in the second year.[12]

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[9]Harves Rahe, "Trends in Teaching Shorthand/Transcription," Business Education Forum 26 (May 1972):20.

[10]Judith J. Lambrecht, "Selecting the Most Appropriate Shorthand System," Business Education Forum 30 (May 1976):19.

[11]Judith J. Lambrecht, "Aptitude Testing in Shorthand," Business Education Forum 27 (October 1972):17.

[12]Forkner and DeYoung, pp. 94, 100.

Ober reported an average of 44.5 students per school enrolled in second-semester shorthand in 1973-74, whereas an average of 26.1 students per school enrolled in the third quarter (second year), 1974-75. Ober's survey revealed a shorthand retention rate of 59 percent for the first term compared to the shorthand retention rate of 52 percent obtained from Health, Education, and Welfare statistics.

Ober further indicated that at the secondary level, 77 percent of the instructors reported at least 80 percent of the students beginning the first term of shorthand completed it. At the postsecondary level, 57 percent of the instructors reported at least 80 percent of their beginning students completed the term.[13]

Student achievement in shorthand has been a further concern of educators. Rahe reported trends toward compromising achievement standards downward with fewer schools using selection processes or prognostic devices when enrolling students in beginning shorthand.[14] Fewer than 20 percent of the shorthand students are capable of taking 60 words per minute after one year of instruction, and fewer than 50 percent are capable of taking dictation at 80 words per minute after two years of instruction.[15]

These statistics lead one to question the difficulty of present shorthand systems. The major shorthand system in the United States

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[13]B. Scot Ober, "Shorthand Dropout Rates: A Look at the Facts," Business Education World 56 (May-June 1976):4-5.

[14]Rahe, pp. 19-20.

[15]Joe M. Pullis, "Part IV--Improving Evaluation of Shorthand Standards," The Balance Sheet 58 (December 1976-January 1977):159.

today, the Gregg shorthand system, has been revised in the three editions of 1929, 1943, and 1963 to reduce the learning load and the hesitancy in writing shorthand. Shorthand authorities have been concerned with reducing the memory load in shorthand systems. Arnold Condon expressed this potential:

> It is reasonable to believe that the years ahead will bring further revisions and simplifications in our shorthand systems that will result in a reduction in the memory load but with a good speed potential.[16]

Throughout the years, reports of student failures and low student achievement have prompted research studies comparing the memory loads of shorthand systems. Some studies have compared the structural aspects of shorthand systems; some have compared the stroke counts of high-frequency word lists. Analyses have been made of the learning-load reductions of the Gregg revisions. Analyses have also been made of principles, memory forms, and phrases in the textbooks of shorthand systems.

Presumably, most educators would be interested in their students achieving the highest possible standards within the shortest possible time with the least learning difficulties. Statements by South-Western Century 21 promoters indicate their system reduces learning difficulties and shortcomings often found in other systems. The credibility of these statements should be tested. The purpose of this study was to provide a comparison of the memory loads of Gregg Diamond Jubilee and South-Western Century 21 shorthand to assist teachers in their search for the shorthand system best suited to their students' needs.

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[16]Arnold Condon, "A Look at Shorthand," Business Education Forum 15 (October 1960):19.

D. DEFINITION OF TERMS

Gregg DJ. Gregg Diamond Jubilee shorthand, second edition. This abbreviation will be used throughout the study.

SW Century 21. South-Western Century 21 shorthand. This abbreviation will be used throughout the study.

Shorthand Character. A shorthand symbol representing a letter of the shorthand alphabet, a sound, combination of sounds, or a word.

Stroke Count. Tabulation of shorthand characters written in a word. Each shorthand character in a word is counted as a stroke, and each pen lift within the writing of one word is considered an additional stroke.

Schwa. An unstressed, neutral-vowel sound. The schwa is shown as an "*" when phonetic spellings are used.

Alphabetic Words. Words in which all sounds except internal minor-vowel sounds (schwas) are written using basic shorthand alphabet letters (single-letter vowel, consonant, and consonant digraph symbols).

Memory Forms. Words designated as Brief Forms in Gregg DJ shorthand and Speedforms in SW Century 21 shorthand. The shorthand outlines do not follow definite principles of abbreviation and are not written in full.

Abbreviated/Contracted Words. Words designated as Abbreviated in Gregg DJ shorthand and as Contracted/Correspondence forms in SW Century 21 shorthand. In Gregg shorthand the outline contains only the first part of a word, such as a-l-f for alphabet. In SW Century 21 the contracted outline is based on the beginning and distinctive sounds of a word, such as re-k-n-i-s for recognize. A few abbreviated words also occur.

Shorthand Principles. Rules for writing a sound or a combination of sounds in shorthand. Shorthand principles include devices to shorten the writing of words, such as blends and bends, word beginnings, word endings, and vowel and consonant combinations.

Shorthand Theory Words. Words containing one or more shorthand principles.

Joining Principles. Rules directing how shorthand characters are connected. Joining principles include the selection of alternative shorthand characters as well as the direction of writing these characters and the positioning of these characters on the line of writing.

Primary Shorthand Alphabet. The single-letter shorthand symbols portraying the vowels, consonants, and consonant digraphs of the shorthand system.

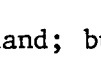
Textually Declared Principles. Principles stated in the beginning shorthand textbooks or shorthand dictionaries of the system.

Textually Undeclared Principles. Principles stated in promotional literature, journal articles, research studies, and advanced textbooks, as well as those observed to occur by the investigator. Textually undeclared principles help explain the composition of shorthand outlines that would otherwise appear to be exceptions within the system.

Observed Principle. Recurring shorthand usages not explicitly stated in textually declared or textually undeclared materials.

Decision Point. Any facet in the construction of the shorthand outline that requires knowledge beyond the shorthand alphabet letters (single-letter vowel, consonant, and consonant digraph symbols) to construct a dictionary-correct outline.

Memory Load. The fundamentals of a shorthand system beyond the shorthand alphabet letters (single-letter vowel, consonant, and consonant digraph symbols) which have to be memorized to enable one to read and write the shorthand accurately. This includes the memory forms and derivatives, abbreviated/contracted words and derivatives, and principles (textually declared and textually undeclared) comprising the shorthand system--the decision points of the system.

Shorthand-Countable Words. Words written with a shorthand character in the word. For example, the word sixth is written  in Gregg DJ shorthand and  in SW Century 21 shorthand; but the word six is written  in both systems. Sixth is a shorthand-countable word, whereas six is not.

Running Copy. Short letters converted to shorthand-countable words.

Presented Words. Textbook words and phrases appearing in lists, charts, or highlighted individually as unrelated thought expressions.

Connected Copy. Textbook words appearing in related thought expressions, such as sentences and paragraphs.

Total Copy. Combined sum of textbook-presented words and connected-copy words.

E. OVERVIEW OF DATA SOURCES AND PROCEDURES

A brief discussion of data sources and procedures is presented in this section. Chapter III contains the detailed description of data sources and procedures.

Data Sources

Shorthand textbooks and dictionaries, teachers' manuals, promotional materials, journal articles, and research studies were used in compiling the descriptive characteristics of the two systems.

The high-frequency words were obtained from The Basic Vocabulary for Written Business Office Communications by Morris Mellinger,[17] a listing of the most frequently used words in business communications.

Typewriting textbooks from the South-Western Publishing Company and the Gregg Division/McGraw-Hill Book Company were the sources of the letters for the running-copy materials.

The shorthand dictionaries of both systems were used to verify the correct outlines of the high-frequency words from the Mellinger list and the running-copy words from the typewriting textbooks.

Word phonetics for the shorthand outlines written in SW Century 21 shorthand were checked using the third and fourth editions of the Thorndike-Barnhart High School Dictionary.[18] Word phonetics for the shorthand outlines written in Gregg DJ shorthand were checked using Webster's Seventh New Collegiate Dictionary, based on the Webster's Third International Dictionary.[19]

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[17]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[18]E. L. Thorndike and Clarence L. Barnhart, eds., High School Dictionary, 3rd ed. (Chicago: Scott, Foresman and Co., 1962); and E. L. Thorndike and Clarence L. Barnhart, eds., High School Dictionary, 4th ed. (Glenview, Ill.: Scott, Foresman and Co., 1965).

[19]Webster's Seventh New Collegiate Dictionary (Chicago: Rand McNally & Co., 1967).

The shorthand textbooks analyzed were the beginning college-level Gregg text, Gregg Shorthand for Colleges, Diamond Jubilee Series[20] and the beginning college-level South-Western text, Century 21 Shorthand, Theory and Practice.[21]

Procedures

The descriptive characteristics of each system were identified and categorized by major theory divisions. Within each division, the individual principles were further categorized according to identical, similar, or unique principles.

The 1,000 most frequently used words were analyzed according to Mellinger frequency, syllabic intensity, stroke count, methods of writing, and textually declared and textually undeclared shorthand principles. A computer program was written to tally and group frequencies based on this analysis. A second computer program was written to list the 1,000 words by methods of writing and shorthand principles used. The data were analyzed using the Significance of a Difference Between Proportions test, the chi-square test, and the t test.

An equal amount of copy was randomly selected from typewriting textbooks of both systems and converted to countable shorthand words. A computer program was written to analyze the running copy on the basis of syllabic intensity, stroke count, methods of writing, and textually

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[20]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973).

[21]Irol W. Balsley, Century 21 Shorthand: Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

declared and textually undeclared shorthand principles. A second computer program was used to list the words by methods of writing and shorthand principles used. Frequency rankings were obtained for each system by methods of writing and major shorthand theory groupings. Stabilization of rankings was used to ascertain the impact of adding each 100 words of the running copy. The data were anlyzed using the Significance of a Difference Between Proportions test, the chi-square test, and the t test.

The shorthand-countable words of the beginning college textbooks of both systems were punched onto data cards, and their occurrences were tallied in the textbooks. Computer programs were written to record the occurrences of the words and the principles within the words, the points and places of introduction of the words, and the absolute percentage deviations of the 1,000 words in each textbook from adjusted Mellinger percentages. A separate computer program was written to search the textbooks for any word in the 1,000 word list which did not occur in the textbooks.

Word introduction points were analyzed using a ratio of earlier over later points of introduction, with the results reported by probability levels. The absolute percentage deviation of the 1,000 words in the textbooks from the adjusted Mellinger listing was computed for each system. The results were analyzed by t tests.

F. DELIMITATIONS

The following delimitations were made in this study:

1. The descriptive comparison of the Gregg DJ shorthand and the SW Century 21 shorthand systems was confined to the primary alphabets and

the textually declared and textually undeclared principles. These factors were compared for similarities and differences between the systems. This study did not attempt to trace the origins of the shorthand characters in each system or assign authorship of the characters in either system. The phonetic guidelines for words to be written in shorthand were checked by each system's phonetic dictionary base: Webster[22] (Gregg DJ) and Thorndike-Barnhart (SW Century 21).

2. Comparison of the memory forms in each system included the number of memory words represented by each outline, placement of the memory form on the Mellinger high-frequency word list, and memory forms common and unique to the systems. Abbreviated/contracted words were described by the general rules for writing the words. The study did not attempt to assess the appropriateness of the words as memory forms or abbreviated/contracted words. Further, the study did not attempt to assess the optimum number of memory forms or abbreviated/contracted forms.

3. The 1,000 most frequently used words were analyzed according to methods of writing (alphabetic words, abbreviated/contracted words, memory forms, and shorthand theory words); stroke count; syllabic intensity; Mellinger frequency; and textually declared and textually undeclared principles. Textually undeclared principles were used to explain outlines written contrary to textually stated principles. This study did not attempt to assess the fluency of outline construction, nor was it concerned with the speed of constructing individual shorthand characters.

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[22] Charles E. Zoubek, "How System Changes are Made in Gregg Shorthand," Business Education World 56 (September-October 1975):14.

4. The running-copy analysis involved the selection of shorthand countable words from letters in the typewriting textbooks of both publishing companies. The study did not attempt to assess the phrasing logic of the systems, as the outlines could be written without phrasing.

5. The textbook analysis of the 1,000 most frequently used words determined the occurrences and the spread of these words in the beginning textbooks of each system. The study did not attempt to assess the recommended instructional procedures or textbook formats.

G. ORGANIZATION OF THE STUDY

The remaining chapters are organized as follows:

Chapter II is a review of related literature.

Chapter III details the procedures and sources of data used in the subsections of the study:

1. Descriptive characteristics of Gregg DJ and SW Century 21 shorthand
2. Analysis of the Mellinger 1,000 most frequently used words
3. Analysis of 3,000 running shorthand-countable words
4. Textbook analysis of Mellinger's 1,000 most frequently used words

Chapter IV presents the description of the shorthand systems. Chapter V contains the analysis of the first 1,000 Mellinger words and the 3,000 running shorthand-countable words. Chapter VI contains the textbook analysis of the first 1,000 Mellinger words. Chapter VII contains the summary, conclusions, and recommendations of the study. The bibliography contains a list of the references consulted in this study.

The Appendices contain materials related to the four phases of the study:

Appendix A: Materials used in the analysis of Mellinger's 1,000 most frequently used words.

Appendix B: Materials used in the analysis of 3,000 running shorthand-countable words.

Appendix C: Materials used in the analysis of the shorthand textbooks.

Appendix D: Description of Gregg DJ and SW Century 21 shorthand systems.

Appendix E: Supplemental Data for the Mellinger 1,000 Most Frequently Used Words Analysis.

Appendix F: Supplemental Data for the Shorthand Textbook Analysis.

CHAPTER II

REVIEW OF RELATED LITERATURE

Some studies comparing shorthand systems have concentrated on the structural characteristics and the word-construction principles of shorthand systems. In some studies, the Gregg system has been compared with other systems, such as Thomas Natural, Speedwriting, and Linton. Also, comparisons have been made within the Gregg shorthand system to determine the differences in the various editions of Gregg. More recently, studies have been conducted using high-frequency words to analyze the shorthand textbooks of a system.

Research studies reviewed in this chapter are grouped into four categories: (1) structural analyses, (2) system analyses, (3) Gregg revision analyses, and (4) textbook analyses.

A. STRUCTURAL ANALYSES

Studies describing and comparing the descriptive characteristics of shorthand systems are discussed in this section. The studies by Fry and Merrill concentrated primarily on a broad analysis of the physical features of the systems, such as vowel and consonant characteristics and the principles of the system.

Fry Study[1]

One of the first studies comparing shorthand systems was conducted by Lois Fry in 1942. Fry compared the structural characteristics of five systems: Gregg, Isaac Pitman, Thomas Natural, Speedscript, and Dickinson. She used a chart to show how English sounds in each system were represented. A list was made of the shorthand principles used in the various systems, and conclusions were drawn about the similarities and differences of each system.

She found that shorthand words were written as sounded and not by the longhand spelling. Sounds were represented by letters designated to portray that sound, and letters were not used when they did not represent a sound. Treatment of the vowel sounds differed from system to system. All systems studied used vowels except the Dickinson system, which ignored all but the strongly accented vowels. All systems studied used loops, circles, and hooks for varying purposes, such as vowels, disjoined prefixes, suffixes, and consonants. Dickinson's system, however, was comprised largely of longhand characters.

The Fry study was primarily concerned with the physical characteristics of similarities and differences. No attempt was made to indicate which system could be more quickly executed or learned.

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[1]Lois I. Fry, "A Comparative Study of the Structural Characteristics of the Various Shorthand Systems" (Master's thesis, State University of Iowa, 1942).

Merrill Study[2]

Merrill compared selected shorthand systems: Isaac Pitman, Benn Pitman, Gregg Anniversary, Gregg Simplified, Thomas Natural, and Dewey shorthand. She analyzed the systems' similar and distinctive characteristics. The symbols used for the alphabets, the writing principles, and the facilitating devices were described. She found that vowels were indicated by the position of a consonant to the line of writing or were written by symbols representing specific vowel sounds.

Each system studied had an organized set of principles to facilitate fluent writing. She classified these principles as:

1. Phonetic statements to describe the alphabet
2. Joining rules to connect separate symbols
3. Developmental principles to increase reading and writing fluency
4. Abbreviating principles to shorten an outline, and
5. Shortcuts to condense writing by phrasing or omitting sounds and words.

Merrill concluded that the first three principles were essential to attaining the shorthand writing fluency required for ordinary business dictation. Abbreviation and shortcut principles were necessary for attaining the high speed needed in verbatim reporting. Her analysis revealed that the systems having the simplest phonetic alphabet also have the fewest principles and rules. She used a chart to list the word beginnings, word endings, memory forms, and abbreviated forms of the systems.

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[2]Frances Elizabeth Merrill, "An Analysis of the Structure of Selected Shorthand Systems" (Doctoral dissertation, University of Colorado, 1950).

Merrill listed the memory forms of each system in the first 1,000 words of the Dewey word list. Memory forms were tallied according to their frequency within the first 1,000 words and beyond the first 1,000 words of the Dewey word list. She concluded that word frequency was the most appropriate criterion for determining the value of a word sign (brief form). According to Merrill, word signs need continual use if they are to become automatic writing signs. The greater the frequency of the word, the more valuable it is as an arbitrary memory form.

Summary

The Fry and Merrill studies compared shorthand systems descriptively, relating the similarities and differences found in the shorthand alphabets, principles, memory forms, and abbreviating devices. They studied the general characteristics of the systems rather than an in-depth analysis of a particular shorthand system. These studies are exemplary of early research in comparing shorthand systems.

The descriptive characteristics of the Gregg DJ and SW Century 21 shorthand systems were compared in the present study and used to codify shorthand principles forming the data base for the study.

B. SYSTEM ANALYSES

Studies comparing two systems usually involved a comprehensive analysis of those systems. Findings were stated as specific differences between the two systems compared. Studies reviewed in this section involved comparisons of either the Gregg Anniversary, 1929 edition, or the Gregg Simplified, 1949 edition, with another shorthand system. The studies by Serren, Campion, Goranson, and Nipper compared the Gregg

system with the Thomas system. The studies by Foster and Devenny compared the Gregg system with the Linton Abbreviated and the Speedwriting shorthand systems respectively.

Serren Study[3]

The purpose of Serren's study was to compare the learning difficulties of Gregg Anniversary shorthand and Thomas Natural shorthand and to determine the ease of reading and writing the systems by comparing the rules and principles.

A questionnaire was sent to teachers to determine the length of time required to complete shorthand theory and the shorthand writing speed attainable. Such terms as "familiar material" and "words per minute" were undefined on the open-ended questionnaire.

The texts of the two systems were the sources for acquiring the rules, brief forms, consonant characters, vowel characters, phrases, vocabulary, and reading materials. Ayres' first 1,000 most-used words were written in Gregg and Thomas shorthand. Strokes per word were counted in each system and a tabular comparison was made of the strokes required to write the words in the two systems. Serren defined a stroke as a letter expressed in the shorthand word. An extra stroke was counted for each disjoined stroke.

More shorthand strokes were required to write Ayres' 1,000 most-used words in Thomas Natural shorthand than in Gregg Anniversary shorthand. In writing the first 1,000 words, the Thomas Natural writer would write 620 more strokes than the Gregg Anniversary writer.

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[3]Myrtle Serren, "A Comparison of the Learning Difficulties Between Gregg Shorthand and Thomas Natural Shorthand" (Master's thesis, North Texas State Teachers College, 1941).

Serren concluded that reading was facilitated in Gregg Anniversary shorthand by the inclusion of vowels. Since the Thomas Natural system had 228 fewer word signs (brief forms) than Gregg Anniversary, the material could be covered quicker; but Gregg Anniversary was more legible than Thomas Natural because both consonants and vowels were included. Although Gregg Anniversary shorthand had 106 more rules than Thomas Natural shorthand, Serren concluded that sufficient material was included in the Gregg Anniversary textbook to allow thorough mastery of the shorthand. Serren concluded that Gregg Anniversary was the better system with fewer learning difficulties.

Campion Study[4]

The purpose of the Campion study was to determine the learning load required for writing Horn's first 1,000 words in Gregg Anniversary and Thomas Natural shorthand. Campion used an alphabetic listing of the first 1,000 most-used words and classified the words into three mutually exclusive categories: memory forms, abbreviating devices, and words written in full. Each category was tabulated, and rules used in writing each word were listed and tabulated. The findings were presented as frequency counts:

1. Gregg Anniversary shorthand had 422 memory forms; Thomas Natural had 53.

2. In Gregg Anniversary shorthand 96 outlines used an abbreviating principle; in Thomas Natural 270 outlines used an abbreviating principle.

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[4]Harry A. Campion, "A Comparative Study of the Learning Load of the Gregg and Thomas Systems Based Upon the Horn List of One Thousand Most-Used Words" (Master's thesis, Northwestern University, 1948).

3. In Gregg Anniversary shorthand 482 outlines were written in full; in Thomas Natural 677 outlines were written in full.

4. In Gregg Anniversary shorthand 2,854 rules and principles were required to write the first 1,000 words; in Thomas Natural 2,119 rules and principles were required.

The overall conclusion of Campion was that a greater memory load was required to write Horn's first 1,000 words in Gregg Anniversary shorthand than in Thomas Natural shorthand.

Campion and Serren differed in their conclusions. Campion's conclusions were based on the frequencies obtained in writing the 1,000 words, whereas Serren interpreted frequencies as they related to structural differences and textbook materials.

Goranson Study[5]

The purpose of the Goranson study was to determine what constitutes a shorthand stroke and to determine the strokes required to write randomly chosen articles from the shorthand textbooks of Gregg Simplified shorthand and Thomas Natural shorthand. From correspondence with Charles Zoubek of the Gregg system and Louise Scott of the Thomas Natural system, Goranson developed a definition of the term "stroke":

> A stroke is a continuous movement of the pen such as a straight line, a curve, a circle, or a hook, but where there is an abrupt change of motion or a pen lift, there are additional strokes. Thus, —— is one stroke, —— is two strokes, and —+— is three strokes.[6]

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[5]Venna C. Goranson, "A Comparative Study of the Stroke Count of Context Material as Written in the Simplified Gregg and in Thomas Shorthand" (Master's thesis, Northeast Missouri State Teachers College, 1950).

[6]Ibid., p. 15.

Seven articles were selected and written in both systems, and a tabulation was made of the strokes required to write the articles in the two systems. Gregg Simplified shorthand required 8,636 strokes to write the articles, and Thomas Natural shorthand required 7,776 strokes.

The study by Goranson is relevant to the present study in that stroke count was defined and used to analyze running copy. The stroke count is used in the present study as part of the data base for comparing two systems.

Nipper Study[7]

The purpose of the Nipper study was to compare Gregg Simplified shorthand and Thomas Natural shorthand on the basis of physical characteristics, shortcut principles, and abbreviating devices. The shorthand principles and abbreviating devices used in writing the first 1,000 words of the Horn-Peterson high-frequency word list were compared.

The physical characteristics compared were the rules for expressing vowels and consonants and the penmanship rules. Other principles were classified into four groups: words written in full, abbreviating words, memory forms, and shortcut principles. Tabulations were made to indicate the percentage of words in each hundred of the first 1,000 most-used words in the four groups.

Some of the findings pertinent to the present study included:

1. In Gregg Simplified and Thomas Natural, sound is the basic factor in writing words.

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[7]Ruby Louise Nipper, "A Comparison of Gregg Shorthand Simplified and Thomas Shorthand Systems" (Master's thesis, The University of Tennessee, 1951).

2. Gregg Simplified had 16 and Thomas Natural had 18 symbols to express consonants.

3. Gregg Simplified and Thomas Natural both require special penmanship rules for joining shorthand characters. Gregg Simplified had 32 and Thomas Natural had 17.

4. Gregg Simplified and Thomas Natural used some vowel and consonant symbols to express the most commonly used words.

5. The largest group of shortcut principles in each system was word endings.

6. Both systems wrote more words using shortcut principles than any other method.

7. In all classifications except the consonant and miscellaneous principles, Gregg Simplified had more shortcut principles than Thomas Natural.

8. Approximately ten times as many abbreviated words were used in Thomas Natural as in Gregg Simplified.

9. Approximately ten times as many memory forms were used in Gregg Simplified as in Thomas Natural.

The comparison of the shortcut principles used in writing the first 1,000 words revealed a greater usage of shortcut principle classifications by Thomas Natural. Nipper concluded that this intensive use should contribute to making a smaller learning burden for Thomas Natural shorthand than for Gregg Simplified shorthand.

The studies by Serren, Campion, Goranson, and Nipper compared the Gregg shorthand system's Anniversary or Simplified editions with the Thomas Natural shorthand system. The physical features of the systems were described in all the studies. Serren and Goranson compared the

Thomas Natural and Gregg systems on the basis of stroke counts, while Campion and Nipper studied the shortcut principles used in writing words. Words were classified as written in full, memory forms, abbreviations, or shortcut principles with identification of each principle used. These studies were all based on the first 1,000 words of a high-frequency word list.

These studies are relevant to the present study as they provide guidelines for a descriptive comparison of two systems. In addition to the descriptive components in the earlier studies, the present study extends the analysis to joining principles and textually undeclared principles of two systems.

Foster Study[8]

The purpose of the Foster study was to compare Gregg Simplified shorthand and Linton Abbreviated shorthand on the basis of physical characteristics, memory forms, shortcut principles, and the extent to which shortcut principles were used in writing the first 1,000 words in the Horn-Peterson word list. The Foster procedures basically followed the Nipper procedures previously cited.

Foster reported frequency counts and percentages in writing the first 1,000 words of the Horn-Peterson list. The following summary was made:

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[8]Francis Cumi Foster, "A Comparison of Gregg Simplified and Linton Abbreviated Shorthand Systems" (Master's thesis, The University of Tennessee, 1954).

	Gregg	Linton
Words written in full	296	247
Abbreviated words	18	30
Memory forms	290	319
Use of shortcut principles	538	582

If a word was classified as either an abbreviated word or a memory form and a shortcut principle also occurred, the word was counted in both of the occurring classifications.

Some of the findings pertinent to this study include:

1. In seven of the ten 100-word groups, more words were written in full in Gregg Simplified than in Linton Abbreviated.

2. The greater use of abbreviated words in Linton Abbreviated caused a heavier memory load than in Gregg Simplified. In Gregg Simplified, no abbreviated word occurred until the fifth 100, and five or fewer occurred in each remaining 100.

3. In the first 100 words both Gregg Simplified and Linton Abbreviated had 58 memory forms.

4. The use of shortcut principles in Gregg Simplified increased from 17 in the first 100 to 60 in the tenth 100, with a high of 75 in the ninth 100-word grouping. The use of shortcut principles in Linton Abbreviated increased from 21 in the first 100 to 73 in the tenth 100. Gregg Simplified had 38 more shortcut principles than Linton Abbreviated, however.

5. In writing the first 1,000 words of the Horn-Peterson list, 24.63 percent of the Gregg Simplified shortcut principles and 26.04 percent of the Linton Abbreviated shortcut principles were not used; 57.46 percent of Gregg Simplified and 51.04 percent of Linton shortcut principles were used an average of less than one time per 100-word grouping.

6. Using frequency of physical characteristics, memory forms, and shortcut principles as a basis for determining memory load, 16, or 66.67 percent, of the 24 summary statements in this study indicated little difference in the memory loads of Gregg Simplified and Linton Abbreviated shorthand.

Devenny Study[9]

The purpose of the Devenny study was to compare Gregg Simplified shorthand and Speedwriting shorthand on the basis of physical characteristics, memory forms, shortcut principles, and the extent to which shortcut principles were used in writing the first 1,000 words in the Horn-Peterson word list. The Devenny study used procedures similar to the Nipper and Foster studies, and findings were interpreted on the basis of physical characteristics and classification of words into the same four groupings:

	Gregg	Speedwriting
Words written in full	296	131
Abbreviated words	18	17
Memory forms	290	232
Use of shortcut principles	539	701

The summary statements revealed the following findings relevant to the present study:

1. In Gregg Simplified more words were written in full in each of the ten 100-word groups than in Speedwriting.

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[9]Nina Lewis Devenny, "A Comparison of the Gregg Shorthand Simplified and the Speedwriting Shorthand Systems" (Master's thesis, The University of Tennessee, 1955).

2. No abbreviated word occurred in either system until the fifth 100-word group.

3. In the first 100 words, 58 memory forms occurred in Gregg Simplified and 56 in Speedwriting.

4. The use of shortcut principles in Gregg Simplified increased from 18 in the first 100 to 60 in the tenth 100, with a high of 75 in the ninth 100-word grouping. The use of shortcut principles in Speedwriting increased from 30 in the first 100 to 77 in the tenth 100, with a high of 84 in the fifth 100-word grouping.

5. In writing the first 1,000 words of the Horn-Peterson list, 22.66 percent of the Gregg Simplified principles and 28.07 percent of the Speedwriting principles were not used; 60.94 percent of the Gregg Simplified and 42.10 percent of the Speedwriting shortcut principles were used an average of less than one time per 100-word grouping.

6. Using frequency of physical characteristics, memory forms, and shortcut principles as a basis for determining memory load, 16, or 66.67 percent, of the 24 summary statements in this study indicated little difference in memory loads between Gregg Simplified and Speedwriting.

Foster and Devenny found little difference in the majority of their memory load comparisons of Gregg Simplified with Linton Abbreviated and and Speedwriting. The Foster and Devenny studies are related to the present study by comparing two shorthand systems using a high-frequency word list. Foster and Devenny followed the Nipper format, which compared Thomas Natural with Gregg Simplified. The three studies established procedures for major classifications of written shorthand words.

Summary

The studies reviewed in this section revealed various procedures for assessing the memory load of shorthand systems. Systems were compared utilizing stroke counts in the Serren and Goranson studies. Serren's work was one of the first to compare systems on the basis of their principles, memory forms, and physical characteristics. Further studies by Campion, Nipper, Foster, and Devenny have expanded and clarified procedures for categorizing words. The basic procedures established by these studies are used in the present study to classify the most frequently used words on the Mellinger high-frequency word list. In addition to these classifications, the present analysis of two shorthand systems included joining principles and textually undeclared principles. The data from the analysis of high-frequency words was used to study shorthand running copy and the shorthand textbooks of the systems.

C. GREGG REVISION ANALYSES

The effect of memory-load reduction on the Gregg shorthand revisions is reviewed in studies presented in this section. The Gregg shorthand system has undergone major revisions aimed at reducing the memory load in the system. The revisions reviewed in this section include the 1916 revision; the 1929 revision, entitled the Anniversary edition; the 1949 revision, entitled the Simplified edition; and the 1963 revision, entitled the Diamond Jubilee edition. The studies include the Chapman, Dry, Wiggs, Curtin, and Gross studies.

Chapman Study[10]

The purpose of the Chapman study was to compare the memory loads in the Anniversary (1929) and Simplified (1949) editions of Gregg shorthand. The first 7,000 words of the Horn-Peterson word list were used in the analysis. Memory load was defined as the writing of words in shorthand that call for memorization of the outline as a whole, such as brief forms and their derivatives; transfer patterns (prefixes and suffixes) used to build words; abbreviated words; and exceptions to the basic principles of word construction. Words were classified according to these categories and a count was made of the words in each group. Stroke counts were made of the words. Chapman found an increase of approximately one-half stroke per shorthand outline from the Anniversary edition to the Simplified edition.

The findings related to memory load included:

1. The Anniversary shorthand outlines changed in Simplified shorthand totaled 2,511, 35.7 percent.

2. A 12.49 percent stroke increase was required to write the words in Simplified shorthand.

3. In the first 7,033 words of the Horn-Peterson list, 415 brief forms occurred in the Anniversary edition and 222 in the Simplified edition, a 46.5 percent reduction. The Anniversary brief form derivatives totaled 959 as compared with 486 Simplified brief form derivatives. Approximately half, 49.3 percent, of the Anniversary brief form derivatives were eliminated in writing Simplified brief form derivatives.

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[10]Frances Carahan Chapman, "A Comparison of the Memory Load of the Anniversary and Simplified Editions of Gregg Shorthand" (Doctoral dissertation, The University of Pittsburgh, 1951).

4. Anniversary abbreviated forms and derivatives totaled 895 compared with 161 Simplified abbreviated forms and derivatives, an 82 percent reduction.

5. In Anniversary 175 deviations from basic writing principles occurred while only five deviations occurred in Simplified shorthand, a 97.1 decrease.

6. Twenty-six Anniversary rules were dropped in the Simplified edition.

7. Anniversary prefix forms totaled 59 compared with 35 Simplified prefix forms; 83 Anniversary suffix forms compared with 43 Simplified suffix forms. Twenty-four Anniversary prefixes and 40 suffixes were eliminated in the Simplified edition.

Chapman concluded that a reduction in the memory load occurred in the Simplified edition. This conclusion was made even though an increase was required in the average number of strokes to write the first 7,000 Horn-Peterson words.

Dry Study[11]

The purpose of the Dry study was to compare the memory load in the Simplified and Diamond Jubilee editions of Gregg shorthand. The extent to which this change increased the manual effort to write vocabulary was measured. The first 4,949 words of the Silverthorn high-frequency word list were analyzed.

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[11]Nellie Ellison Dry, "Memory Load of Simplified and Diamond Jubilee Compared" (Doctoral dissertation, Pennsylvania State University, 1967).

The correct shorthand outlines were copied from shorthand dictionaries, and the number of strokes for each outline in each edition was recorded. Brief forms and their derivatives, abbreviated forms and their derivatives, and exceptions to basic principles were identified as "memory words." Classifications were made of the words into groups and the groups tallied. Any change in writing the words in the two editions was noted.

The findings of this study included:

1. The Simplified shorthand outlines changed in writing the Diamond Jubilee edition totaled 997, a 20.1 percent change.

2. A stroke increase of 4.05 percent occurred to write these words in Diamond Jubilee shorthand, an increase of approximately one-third stroke per outline.

3. The 229 Simplified brief forms were reduced to 154 Diamond Jubilee brief forms, a reduction of 32.8 percent.

4. The 445 Simplified brief form derivatives were reduced to 288 Diamond Jubilee brief form derivatives, a reduction of 35.3 percent.

5. The 91 Simplified abbreviated forms and derivatives were reduced to 49 Diamond Jubilee abbreviated forms and derivatives, a reduction of 46.2 percent.

6. Eight deviations from basic principles occurred in Simplified shorthand with only two deviations in Diamond Jubilee shorthand.

7. Thirteen Simplified shorthand rules were changed and ten rules eliminated from the Diamond Jubilee edition.

8. Six Simplified shorthand prefix forms and 16 Simplified shorthand suffix forms were eliminated or changed in the Diamond Jubilee edition.

Dry concluded that a reduction occurred in the memory load required to write Silverthorn's first 4,949 words in the Diamond Jubilee edition. The memorized forms--brief forms, brief form derivatives, abbreviated forms, abbreviated form derivatives, prefixes, and suffixes--were held to a minimum in the Diamond Jubilee edition. In this edition words were written simpler, fuller, and in more exact shorthand forms than in the Simplified edition. Dry concluded that this should enable the student to retain the outlines longer and to transcribe more accurately.

The Chapman and Dry studies are related to the present study by comparing the memory load of two shorthand editions using high-frequency word lists. Both dissertations concentrated on analyzing words within one shorthand system. Although a larger number of words is analyzed in these Gregg revision studies, as compared to the studies by Foster, Devenny, Nipper, Campion, and Serren, the results of the analysis centered around the same basic factors: alphabetic words, memory forms and derivatives, abbreviated words, shortcut principles, and stroke counts. To this point, general memory-load analysis using high-frequency words was concentrated primarily on the above factors when two systems were studied. The studies by Wiggs, Curtin, and Gross, discussed below, represent a departure from analyzing an entire shorthand system to concentrating on one or more specific factors in a system.

Wiggs Study[12]

The purpose of the Wiggs study was to analyze the brief forms and illustrative words of the beginning high school textbook of the Diamond Jubilee edition.

Wiggs counted the shorthand strokes required to write the brief forms and Silverthorn's first 1,000 high-frequency words in both Diamond Jubilee and Simplified shorthand. She reported the changes in the brief forms by describing the brief forms eliminated, added, or changed. The effect upon the length of the shorthand outline from the Simplified to the Diamond Jubilee edition was determined by the increase or decrease in stroke counts. She found that Simplified shorthand required 3,499 shorthand strokes to write the first 1,000 words and Diamond Jubilee required 3,735 shorthand strokes. Wiggs interpreted this as a 0.2 stroke per word increase and concluded that this increase in writing the 1,000 words would not produce a loss of speed in writing the outlines.

Wiggs also analyzed the illustrative words at the beginning of textbook lessons. She included only one-word illustrative words and did not include word charts or contextual materials. She found that 284 of the first 1,000 high-frequency words illustrated principles in the Diamond Jubilee edition. In Silverthorn's listing of 4,949 frequently used words, 726 words, 14.7 percent, illustrated shorthand principles in the textbook. Further, 321 of the illustrative words were not included in the Silverthorn list. By combining brief forms and illustrative words, 276 of the top 500 frequently used words, 55 percent, were used in the text.

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[12]P. June Wiggs, "An Analysis of High Frequency Words in Gregg Shorthand, Diamond Jubilee Series," Journal of Business Education 39 (November 1963):69-71.

Curtin Study[13]

The primary purpose of the Curtin study was to analyze the changes in brief forms in the 1916, 1929, 1949, and 1963 editions of Gregg shorthand. One of the secondary purposes of the study was to compare the effect of brief form changes on the writing of business context material.

A brief form listing of the four editions was constructed. Tabulations were made of the additions, changes, and eliminations from edition to edition. A stroke count was made of business letters selected from the Prentice-Hall and South-Western typewriting textbooks to determine stroke changes in writing the 1916, 1929, 1949, and 1963 Gregg shorthand brief forms.

The findings relevant to the present study included:

1. The brief forms decreased from 702 in 1916, to 615 in 1929, to 225 in 1949, and to 148 in 1963.

2. The 1916 and 1929 editions included 361 brief forms eliminated in the 1949 and 1963 editions. The 1963 edition eliminated 81 brief forms that had been retained through the first three editions.

3. The increase in shorthand strokes required to write business context material from 1929 to 1949 was 536 strokes, 7.9 percent; the increase from 1949 to 1963 was 321, 4.4 percent.

4. The outlines revised in writing the business context material in 1949 totaled 409, 13.6 percent; the revised outlines in 1963 totaled 282, 9.4 percent.

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[13]Carolyn McLean Curtin, "An Analysis of Changes in Brief Forms in the 1916, 1929, 1949, and 1963 Editions of Gregg Shorthand" (Master's thesis, The University of Tennessee, 1964).

5. Of the 536 strokes added in 1949, 324, 60.5 percent, were added as a result of brief form revisions; of the 321 strokes added in 1963; 257, 80.1 percent, were added as a result of brief form revisions.

6. Of the 409 words revised in 1949, 253, 61.9 percent, were revised as a result of brief form changes; of the 282 revised in 1963, 184, 65.3 percent, were revised as a result of brief form changes.

Curtin concluded that the major percentage of stroke changes in the words revised in the business context material was the result of brief form revisions.

Gross Study[14]

Gross analyzed the changes in principles and abbreviating devices in the 1916, 1929, 1949, and 1963 editions of Gregg shorthand. One of the purposes of the study was to compare the effect of changes in the last two editions on the writing of business context materials.

A listing of principles and abbreviating devices in each edition was developed; and tabulations were made of the additions, eliminations, and alterations in principles from edition to edition. The shorthand stroke changes in the 1929, 1949, and 1963 editions were determined using business letters selected from two typewriting texts.

Findings relevant to memory load included:

1. Principles and abbreviating devices decreased from 190 in 1916 to 174 in 1929, a 8.42 percent decrease; to 138 in 1949, a 20.69 percent decrease; and to 113 in 1963, an 18.12 percent decrease.

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[14]Emma Lou Gullett Gross, "An Analysis of Changes in Principles and Abbreviating Devices in the 1916, 1929, 1949, and 1963 Editions of Gregg Shorthand" (Master's thesis, The University of Tennessee, 1966).

2. The increase in shorthand strokes required to write business context material from 1929 to 1949 was 536, 7.9 percent; from 1949 to 1963 was 321, 4.4 percent.

3. The revised outlines in business context material in 1949 was 409, 13.6 percent; in 1963, 282, 9.4 percent.

4. Of the 536 strokes added in 1949, 208, 38.8 percent, were the result of revisions in principles and abbreviating devices. Of the 321 strokes added in 1963, 64, 19.9 percent, were the result of revisions in principles and abbreviating devices.

5. Of the 409 words revised in 1949, 153, 37.4 percent, were the result of changes in principles and abbreviating devices. Of the 282 words revised in 1963, 98, 34.8 percent, were the result of changes in principles and abbreviating devices.

6. Twenty-three principles and abbreviating devices were eliminated from 1916 to 1929, 53 from 1929 to 1949, and 25 from 1949 to 1963.

Gross concluded there is a trend toward including fewer disjoined outlines in the Gregg shorthand system. She found less than 40 percent of the changes in the strokes required to write the business context material was caused by revisions in the principles and abbreviating devices. This study substantiated Curtin's results, as Curtin concluded that the major change in stroke counts in the revised words of business context material was the result of brief form changes.

The Gross, Curtin, and Wiggs studies are examples of analyzing memory load reductions in the Gregg shorthand editions. These studies represent a change from previous analyses by concentrating on smaller segments of the system. They are relevant to the present study as brief forms, abbreviating devices, and shorthand principles were analyzed.

Summary

The studies by Chapman, Dry, Wiggs, Curtin, and Gross indicated that the memory load in the Gregg system has been reduced in each edition since 1916. This reduction in the memory load has produced an increase in stroke count as measured by both the high-frequency word list, as used in the Chapman, Dry, and Wiggs studies, and in running business copy, as used in the Curtin and Gross studies. These studies provide evidence that the memory load, as measured by brief forms, abbreviated words, and shortcut principles, has been reduced in Gregg shorthand.

D. TEXTBOOK ANALYSES

Studies of textbook analyses relating to the use of high-frequency words as well as general textbook analyses of principles and brief forms are discussed in this section. Flood studied the distribution of the learning loads in the textbooks of two systems. Shell, Montgomery, Mass, and Finney analyzed textbooks in the Gregg Simplified edition. Richards used high-frequency words in his analysis of 13 systems. Vawdrey and Reese and Smith analyzed Diamond Jubilee shorthand textbooks. A reply to the Reese and Smith analysis was published and is reviewed in this section. Gallion and Kavan compared Gregg DJ and SW Century 21 textbook materials.

Flood Study[15]

The purpose of the Flood study was to make an inspectional analysis of the initial learning materials of Gregg Simplified shorthand and Thomas

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[15]Hazel Arnette Flood, "Some Factors Involved in Learning Shorthand--Analyses of the Learning Load of Two Systems of Shorthand" (Doctoral dissertation, University of Minnesota, 1953).

Natural shorthand to determine if the materials had been graded in difficulty and if they were unnecessarily difficult. Gradation of materials was studied using a reading formula, ratio of new words, and analysis and distribution of principles. Difficulty factors were studied through vocabulary repetitions, principles covering theory, and consistency in using principles.

Findings relating to factors affecting difficulty included:

1. Seventy-six percent of the words in Chapter I of Gregg Simplified and 86 percent of the words in Unit I of Thomas Natural were one syllable.

2. Ninety-six percent of the words in Chapter I of Gregg Simplified and 99 percent of the words in Unit I of Thomas Natural did not have more than two syllables.

3. The Gregg Simplified materials provided automization (at least ten occurrences of a word) for 15 percent of the total vocabulary; the Thomas Natural materials, 13 percent.

4. Fifty-six percent of the total Gregg Simplified vocabulary and 63 percent of the total Thomas Natural vocabulary did not appear more than two times.

5. Twenty-two Gregg Simplified principles and nine Thomas Natural principles appeared to have limited applications. Mastery of the principles would not have been possible without supplementary work.

Both systems were found to have comparatively easy material. The first lessons in both systems appeared to be simple, and Flood concluded there should be little difficulty in learning the lessons. The length of the lessons and the ratio of new words appeared to be dependent on the theory presented. Flood concluded there had been no rigid control to keep the ratio of new words at a low level. Materials had not been graded on

the basis of distribution of principles, nor were the materials designed to provide complete mastery of a large segment of the vocabulary presenting the theory. Flood further concluded that the memory burden was increased unnecessarily by inconsistencies in the application of principles.

Flood recommended that in gradation and/or even distribution of the learning load in each system, consideration should be given to both principles and memory forms. Special memory forms should be held to a minimum and used only for high-frequency words that present problems in facility.

The series of studies by Shell, Montgomery, Maas, and Finney provide procedural guidelines for textbook analysis and were briefly reviewed for this purpose. The major thrust of these analyses has been the frequency of appearance of principles and abbreviating devices in the various textbooks of the Gregg Simplified shorthand edition. Similar studies in this series include the Nix[16] and Merritt[17] studies, which will not be reviewed.

Shell Study[18]

The purpose of the Shell study was to analyze the word content of the contextual material of Gregg Shorthand Manual Simplified, Functional Method. The frequency of brief forms and application of shorthand principles and abbreviating devices were analyzed.

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[16]Charles G. Nix, "Frequency of Brief Forms and Their Derivatives in Gregg Shorthand Simplified for Colleges, Volume I" (Master's thesis, The University of Tennessee, 1954).

[17]William Luther Merritt, "The Frequency of Brief Forms and Their Derivatives in Gregg Advanced Dictation Simplified" (Master's thesis, The University of Tennessee, 1951).

[18]Walter Shell, "An Analysis of the Frequency of Brief Forms and Principles and Abbreviating Devices in Gregg Shorthand Manual Simplified, Functional Method" (Master's thesis, The University of Tennessee, 1949).

A list of principles and abbreviating devices was prepared and tallies were made. Tallies were not made for principles appearing so frequently that counting was unnecessary. Eight principles were eliminated when a sample count found them to appear at least 20 times in four assignments. Computations were made of total words, different words, and different root words illustrating each principle.

Shell found that 38 principles were used in fewer than ten different words each in the entire book. She recommended that if these principles were not used frequently in ordinary business dictation, some should be dropped from the system to reduce the learning load.

Montgomery Study[19]

Montgomery analyzed the frequency of shorthand principles and abbreviating devices in the word lists and contextual material of Gregg Transcription Simplified. Tallies were made on index cards, and tables were presented showing the frequency of the principles in total words, different words, and root words in the contextual material and word lists. Montgomery suggested that those principles having fewer than 30 applications be eliminated to relieve the memory load.

Maas Study[20]

The purpose of the Maas study was to analyze the frequency of brief forms and derivatives in Gregg Transcription Simplified and compare the

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[19]Alma Ruth Cline Montgomery, "The Frequency of Principles and Abbreviating Devices in Gregg Transcription Simplified" (Master's thesis, The University of Tennessee, 1952).

[20]Martha A. Maas, "Frequency of Brief Forms and Their Derivatives in Gregg Transcription Simplified" (Master's thesis, The University of Tennessee, 1952).

occurrences in the context of Gregg Shorthand Manual Simplified, Functional Method, and Gregg Dictation Simplified. Index cards were made for each brief form. The lesson number in which the brief form occurred and the occurrences of the brief forms were recorded. If a brief form occurred in a phrase or was modified in a phrase, the phrase was written on the card and tallied. Brief form derivatives were written below the root form and tallied.

Among the findings pertinent to the present study were:

1. Thirty of the 188 brief forms had a frequency of 101 or more; 118 had a frequency of between 11 and 100; 45 had a frequency of ten or fewer occurrences.

2. Eighteen of the brief forms occurred ten or fewer times in the context of three books combined.

Maas recommended that teachers provide supplementary dictation or change the text material occasionally to provide exposure to low-frequency brief forms.

Finney Study[21]

Finney analyzed the word content of Gregg Advanced Dictation Simplified for the frequency of shorthand principles and abbreviating devices. Tallies were made of the words in the contextual material containing principles. She found the number of different words applying to a particular principle ranged from zero to 254, with the median being 21. Fifty-two

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[21]Eileen James Finney, "The Frequency of Principles and Abbreviating Devices in Gregg Advanced Dictation Simplified" (Master's thesis, The University of Tennessee, 1959).

principles, one-fourth, had 30 or fewer frequencies. Finney recommended elimination of some of the principles with 30 or fewer applications.

Richards Study[22]

The purpose of the Richards study was to investigate the extent to which shorthand systems included the most-used words early in their basic courses. Richards compared 13 systems on the order of appearance of their textbooks' first 1,000 words with that of the order of appearance of Silverthorn's first 1,000 high-frequency words.

The first 500 words in each textbook were compared, in order of appearance with the rank-order frequency of Silverthorn's first 1,000 high-frequency words. The second 500 textbook words were analyzed in the same manner. A card was made for each of the first 1,000 textbook words of each text that did not appear on the Silverthorn first 1,000 word list. Those words were checked against the total Silverthorn list to determine if they occurred elsewhere on the list.

The system having the highest number common to the Silverthorn list was Rapid Writing, with 59 percent of the first 500 textbook words also included in Silverthorn's first 1,000 high-frequency words. Quickhand was the lowest with 30.4 percent. Gregg DJ ranked 12 with 40.4 percent. According to Richards, in the highest ranking system 41 percent of the first 500 textbook words were of little value to the student in writing high-frequency words. They made up a large part of the memory load but contributed little to high-frequency word usage.

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[22]Ralph J. Richards, "A Comparison of Current Shorthand Systems Using Silverthorn's High-Frequeney Word List" (Master's thesis, Utah State University, 1966).

In the second 500 textbook words, Gregg's rank increased to eight. The Gregg system had 35.8 percent of the second 500 words in their text common to the first 1,000 words of Silverthorn's list.

In comparing the first 1,000 words in the text with the first 1,000 words of the Silverthorn list, Gregg ranked ten with 38.1 percent common words. In the highest ranking system, Rapid Writing, 44.9 percent of the first 1,000 words presented in the text were high-frequency words. Richards indicated that 55 percent of the words the student must learn in the first 1,000 words of the text would not be used in 80 percent of the shorthand dictation received on the job.

Finally, the first 1,000 words of each system's textbook was compared to the list of 4,949 Silverthorn high-frequency words to see how many textbook words could be considered high-frequency words. As many as 856 (85.6 percent) and as few as 628 (62.8 percent) words in the first 1,000 words of the textbooks were common to the 4,949 high-frequency words.

Richards concluded that the 13 systems did not present words according to their frequency of use in written business communications. Many words encountered early in the textbooks were not high-frequency words and were learned at the expense of high-frequency words that should be learned early.

Richards did not analyze the theory presented in the textbook words or the Silverthorn first 1,000 words to determine the shorthand principles in those words. Theory coverage requires that words exemplary of principles be introduced at the point of insertion of the principle. As words in the first 1,000 high-frequency words contain shorthand principles, the introduction of these words would not occur in the beginning of the textbook but only after the principle had been introduced. The present study

differs from the Richards' study by comparing high-frequency words in the entire textbook of two systems rather than on a limited portion of the textbook materials.

Vawdrey Study[23]

The purpose of the Vawdry study was to determine the extent of the 1,000 most frequently used business words in the beginning Gregg DJ high school textbook.

The 1,000 most frequently used words of the Perry list were typed on cards, and the cards were grouped by shorthand principles. To determine the percentage of the frequent words used in the textbook illustrations, each theory group of cards was compared against the illustrated words in the textbook. Brief forms were counted and the percentage of brief forms illustrated was determined.

The contextual material of the textbook and the 1,000 most frequently used words were punched onto data cards. The program searched for the frequent words and tabulated their occurrences. The total words in the text were tabulated to use in calculating the percentages. A tally was kept of those frequent words used six or fewer times in the contextual matter.

Weighted frequencies of each 100-word group were determined. To obtain the weighted frequency, the total words in the text were divided by the frequency of each 100-word group. These percentages were compared to the percentages of the same 100-word group of frequently used words.

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[23]Colleen Vawdrey, "An Analysis of the Extent to Which the Most Frequently Used Business Vocabulary is Utilized in the Beginning Gregg Diamond Jubilee High School Shorthand Textbook" (Master's thesis, Brigham Young University, 1974).

The chi-square test was used to compare the percent of textual content and the percent of business correspondence in each 100-word group.

Vawdrey's findings indicated that:

1. Forty percent of the 1,000 most frequently used words were used to illustrate shorthand principles. Those words represented 20 percent of the total illustrated words in the high school textbook.

2. Eighty percent of the Gregg DJ brief forms appeared in the 1,000 most frequently used words.

3. Seventy-seven percent of the contextual running words of the high school textbook were among the 1,000 most frequently used words. These 1,000 words represented 81 percent of the business correspondence words.

4. Fifty-two percent of the 1,000 frequent words were used six or fewer times in the contextual material of the high school textbook. Of the 128 words not used in the contextual material, 19 words were used as illustrative words.

5. At each 100-word group, the chi-square values indicated a significant difference at the .01 level of significance between the percent of content of the Gregg DJ contextual material and the percent of content of business correspondence.

Vawdrey concluded that no planned or consistent pattern of introducing and reinforcing the 1,000 most frequently used words occurred in the Gregg DJ high school textbook. She recommended consideration be given to using high-frequency words more extensively in illustrating theory principles and in the contextual material of the beginning shorthand textbook.

Reese and Smith Study[24]

The purpose of the Reese and Smith study was to present an analysis of the Gregg DJ high school shorthand textbook.

To analyze the content of the textbook, Reese and Smith developed a coding scheme to identify theory points in shorthand outlines. The 5,170 most frequently used words of the Silverthorn-Perry merged word list were coded as well as the words in the textbook not on the word list. The study was divided into two major areas of research: (1) models for analyzing shorthand learning materials, and (2) the content analysis of the basic shorthand textbook.

Models for analyzing shorthand learning materials. The purpose of this section was to present two models to serve as (1) a measure of the utility value of Gregg shorthand principles, and (2) the potential for including high-frequency words in the Gregg textbook.

The first model assessed the use of Gregg shorthand principles in the 5,170 most frequently used words. The total occurrences of all words, and thereby all principles, were converted to percentages to produce a model showing the average occurrence of a principle.

Reese and Smith's findings included:

1. On the average, 44 out of every 100 contextual words in the Silverthorn and Perry samples were written as brief forms. Only three out of every 100 contextual words were brief form derivatives.

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[24]Don Reese and E. Ray Smith, Shorthand--A Textbook Analysis, Monograph 129 (Cincinnati: South-Western Publishing Co., 1976).

2. The basic English alphabetic characters occurred more frequently than the symbols representing derived alphabetic characters.

3. Of the 192 shorthand principles coded, 51 percent were classified as word beginnings or word endings; however, only five of the word beginnings or word endings occurred on the average of one or more times in 100 words of business contextual material. The -ing principle occurred more often than the other word beginnings or word endings. Although these word beginnings and word endings accounted for 51 percent of the shorthand principles, they accounted for only 20 words, on the average, in each 100 words.

A comparison of the percentage of occurrences of shorthand principles in the 5,170 frequent words with the percentage of occurrences of shorthand principles in the high school textbook indicated that 52 percent of the principles occurred fewer times in the textbook than they did in business correspondence. Brief forms appeared fewer times in the textbook than in real life, while brief form derivatives occurred more frequently in the textbook than in business correspondence.

The second model was developed to determine the words from the 5,170 frequent words that could be used in each textbook lesson. A comparison was made between the vocabulary available from the high-frequency list and the vocabulary in the textbook. Twelve of the 42 available high-frequency words were used in Lesson 1, for example. In the basic text, 40.5 percent of the frequent words were not used. All the first 300 frequent words were used in the textbook.

Content analysis of the basic shorthand textbook. Reese and Smith stated the purposes of this portion of the study were to analyze:

> 1. the distribution of the learning load throughout the text,
> 2. the words actually used in "highlighting" new learnings,
> 3. the repetition of those words in the reading/writing material for reinforcement, and
> 4. the scope of the vocabulary of the reading/writing material.[25]

The learning load was defined to consist of the basic and derived alphabetic characters, abbreviating devices, and brief forms.

Approximately nine theory points would have been presented in each of the 40 theory lessons if the learning load had been distributed equally among the lessons. The theory points presented in each lesson ranged from 19 in Lesson 3 to two in Lesson 38. In the first 20 lessons, half the theory lessons, 61.35 percent of the theory was presented.

Of the 1,536 words used to "highlight" new learning in Lessons 1-48, 36 percent of the words did not appear in the contextual material in Lessons 1-70. Approximately 30 percent of the presented words are beyond the 5,170 frequent words. The authors concluded that the reading/writing practice did not reinforce presentation of the theory learning. They further concluded that most of the impact of the initial presentation and drill was lost because of the lack of reinforcement in the reading/writing portions.

In determining principle usage in connected matter, 149 shorthand principles were analyzed by their frequency of occurrences. These 149

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[25] Ibid., p. 21.

principles excluded the alphabetic characters and selected miscellaneous principles previously analyzed. Several shorthand characters were treated as separate principles, such as nd and nt. Reese and Smith found that the ten most frequent of the 149 principles accounted for 41.4 percent of the total uses of theory words in the connected matter of the text. The first 20 most frequent principles accounted for 55.7 percent, and the first 44 most frequent principles accounted for 75.3 percent. Of the 149 principles, 129 accounted for only 44.3 percent of the uses of theory words in the textbook connected matter. Twenty-seven principles were used less than ten times in the connected matter of the textbook.

The brief forms were presented in 15 lessons with 129 shorthand outlines representing 148 words. Reese and Smith determined that 96 of the brief forms were among the first 500 most frequently used words, 127 among the first 1,500, 16 between 1,501 and 5,170. Five brief forms were beyond the first 5,170 frequent words. The first nine brief forms with the largest frequency accounted for 48.4 percent of all brief form usage, and the top 25 brief forms accounted for 77.7 percent usage. The 123 remaining brief forms accounted for 22.3 percent of all brief form usage in Lessons 1-70. Four brief forms did not occur in the contextual material, and five more brief form words were not used in the connected matter of the lessons in which they were introduced, although each had at least one derivative in the lesson. The brief forms won and probable were not used in any of the lessons after their initial lesson of introduction, whereas the brief form was occurred once in the lesson preceding its introduction.

The 5,170 frequent words contained 334 brief form derivatives. Of these derivatives, 195, 58.4 percent, were used in the reading/writing material. Fifty percent of the brief form derivatives in Lessons 1-70 occurred from the 100 brief form derivatives of 21 brief forms.

Based upon the results of their analysis, Reese and Smith concluded two major points: "No discernible pattern of repetition of words illustrating Gregg Shorthand principles exists;"[26] and "No attempt to control the vocabulary, either the words used to introduce principles or words used to reinforce principles in the connected matter, is evident."[27]

The Vawdry study and the Reese and Smith study are related to the present study as high-frequency word lists were employed to analyze the learning materials of a shorthand system. Both studies involved a computer analysis of textual materials using high-frequency word lists. In the present study, a high-frequency word list was employed to study the textbooks of two systems, comparing the use of the high-frequency words in both texts rather than one. The present study used a high-frequency word list independent of either system. That is, neither system's learning material was based upon the high-frequency word list employed.

The present study looked at joining principles and textually undeclared principles that further add to the memory load of a system. Reese and Smith employed the concept of a "model" based on high-frequency words to analyze shorthand learning materials. The present study extended the model concept to joining principles and textually undeclared principles in the two systems.

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[26] Ibid., p. 35.

[27] Ibid., p. 36.

The Reese and Smith study elicited a reply from the Gregg Division/McGraw-Hill Book Company refuting some of the findings they reported. This reply appeared in the form of promotional material from the publishing company. A journal article by A. E. Klein[28] briefly replied to the monograph. The following paragraphs summarize the response to the monography by the Gregg Division.

Reply to Reese and Smith Study[29]

The Gregg Division/McGraw-Hill Book Company issued a reply to the Reese and Smith study. The purpose and justification of the reply were stated:

> Many of the statements made in the monograph need further amplification. There are factual errors and misleading statements, most of them quite serious. In order to provide additional data needed to evaluate the Reese and Smith study, the Gregg Division has prepared this reply.[30]

The Gregg reply responded to specific statements made in the Reese and Smith study and to specific discrepancies between the data reported by Reese and Smith and the textbook. Some of the points presented in the reply included:

1. The procedures used to arrive at the Silverthorn-Perry Merged Word List have never been published, so the validity of the procedures or the merged list cannot be determined. Some common words appearing in the top 5,000 words on the individual lists do not appear on the merged list

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[28] A. E. Klein, "Shorthand Vocabulary Analysis: An Evaluation," Business Education World 57 (November-December 1976):31.

[29] A Reply to the Don Reese and E. Ray Smith South-Western Monograph 129, Shorthand: A Textbook Analysis (New York: Gregg Division/McGraw-Hill Book Company, 1976).

[30] Ibid., p. 1.

and vice versa. Six of the 13 tables in the Reese and Smith study were based on this list.

2. Some words are brief forms principally because of their derivatives. The Gregg reply stated that Reese and Smith indicated that four brief forms did not occur in the contextual material, but they failed to consider the occurrences of derivatives. Specific errors in the Reese and Smith study, such as the brief form probably in fact occurring "beyond" the lesson in which it was presented, were pointed out in the reply. The reply indicated further that Reese and Smith stated that five brief forms were beyond the 5,170 most frequently used words: correspond, govern, organize, Mr., and Mrs. The reply indicated that Mr. and Mrs. were on both the individual lists of the Silverthorn-Perry Merged List but were not on the merged list itself. Further, in comparing average occurrences with actual occurrences of brief forms, Reese and Smith were criticized for ignoring the fact that all brief forms are not available for use until Lesson 33, almost halfway through the book.

3. Concerning coverage of shorthand principles, Reese and Smith compared the percentage of occurrences of each shorthand principle in the merged word list to the percentage of occurrences in the shorthand textbook. According to the Gregg reply, the percentage of occurrences should have been based on the total number of words available from the point at which the principle was introduced. The introduction of new principles continued until Lesson 47 and were not all available for use before then. In the running words from which the Silverthorn-Perry Merged List was formed, every shorthand principle had an equal chance of occurring, whereas every principle did not have an equal chance of occurring in the graded text.

4. Reese and Smith compared the high-frequency words used in each lesson to the 5,170 high-frequency words available for use in each lesson. The Gregg reply to this procedure indicated that the number of words listed as available for use was misleading because different forms of the same word were included in the count. In Lesson 9, for example, 100 words were available from the Silverthorn-Perry list but 38 were actually used. The 100 available included special, specialists, specialized, especially, and specially. The reply indicated perhaps different words, rather than different forms of the same word, give the student a wider range of practice content.

5. The Gregg reply questioned using only the words in connected material and excluding the word lists introducing new principles. According to the reply, this occurred in Table 4 of the monograph, which contained the number of words that could have been used from the high-frequency word list, the number actually used from the high-frequency word list, and the number beyond the 5,170 high-frequency words.

6. The Gregg reply suggested that a corresponding analysis of the SW Century 21 shorthand textbook would have helped reduce the distortion of reviewing only one system. For example, Reese and Smith indicated that five Gregg brief forms were beyond the Silverthorn-Perry 5,170 most frequently used words: correspond, govern, organize, Mr. and Mrs. SW Century 21 shorthand also contains speedforms for these words and uses the same shorthand outlines for Mr. and Mrs.

To refute the Reese and Smith statement that vocabulary was not controlled, the Gregg reply contained a sample comparing vocabulary levels in both texts. Beginning with Lesson 10 and each tenth lesson thereafter

for the Gregg and South-Western textbooks, the first page of connected matter was analyzed using the Mellinger high-frequency list. The average percentage of words were reported in the following levels: top 100 words, Gregg, 56 percent and Century 21, 53 percent; top 500 words, Gregg, 80 percent and Century 21, 79 percent; and the top 5,000 words, Gregg 93 percent and Century 21, 98 percent. The South-Western text had a lower percentage of usage in the top 100 and 500 words than the Gregg text. The Gregg reply interpreted this as showing that the Gregg text had more practice material on the less frequent words (those beyond the top 5,000) than the Century 21 text; that is, lower frequency words were not included at the expense of the top 100 and top 500 words.

Gallion and Kavan Study[31]

The purpose of the Gallion and Kavan study was to compare Gregg DJ and SW Century 21 shorthand using the 2,500 most frequently used words on the Mellinger list. Three randomly selected dictation passages were analyzed from the beginning high school textbooks of each system. The comparisons were made using computer analysis.

Of the 148 brief form words in Gregg DJ, 126 were included within the first 1,500 most frequently used words, 137 in the first 2,500 words. Eleven brief form words, 7.4 percent, were not among the 2,500 frequent words. Of the 214 SW Century 21 speedform words, 174 were included within the first 1,500 most frequently used words, 189 in the first 2,500 words.

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[31]Leona M. Gallion and C. Bruce Kavan, "A Comparison of Gregg Diamond Jubilee and Century 21 Shorthand," paper presented at the American Educational Research Association meeting, San Francisco, California, 22 April 1976.

Twenty-five speedform words, 11.7 percent, were not among the 2,500 frequent words.

SW Century 21 had 225 speedform derivatives within the first 1,500 most frequent words and 351 within the first 2,500. Gregg DJ had 120 brief form derivatives within the first 1,500 most frequent words and 182 within the first 2,500.

Within the 2,500 words, Gregg DJ contained 246 words with at least one word beginning and 328 words with at least one word ending. SW Centurn 21 had 207 words with at least one word beginning and 427 words with at least one word ending.

Within the first 2,500 most frequent words, the mean number of shorthand strokes per word in Gregg DJ shorthand was 4.379 strokes and in SW Century 21 shorthand was 4.200 strokes. The difference was significant at the .00001 level.

Three randomly selected lessons from each of the high school textbooks were chosen, and all the words illustrating theory as well as reading and writing practice were included in the analysis. The percent of words beyond the 2,500 most frequent words in Gregg DJ practice materials ranged from 8.0 percent to 15.5 percent. The percent of words beyond the first 2,500 words in SW Century 21 practice materials ranged from 1.6 percent to 6.5 percent.

The Gallion and Kavan study represented a new dimension in studies using high-frequency word lists. They studied two shorthand systems using a high-frequency word list and then used the word list to analyze practice materials from the two systems. The present study analyzed two shorthand systems using a high-frequency word list as the base of comparison, and the

word list was used to study the textbook materials of the two systems. Comparisons were made of the two systems using computer analysis.

Summary

Gregg Simplified shorthand represented approximately a 50 percent reduction in the teaching and learning load from the Gregg Anniversary edition.[32] Researchers have analyzed the textbook materials of the Simplified edition using high-frequency words and frequency of principles as indicators of memory load.

Flood, in her analysis, suggested that provision for mastery of a larger basic vocabulary be considered. She suggested that running words or the total number of principles per lesson be considered in the distribution of the learning load.

The studies by Shell, Montgomery, Maas, and Finney revealed that many principles in the Simplified edition did not appear frequently in the textbooks of that edition. The investigators recommended that infrequently used principles be eliminated from the system to reduce the memory load. They suggested that if the textbook content were any indication of the dictation a student would encounter in an office, some principles were used so infrequently they were not justified.

The Gregg DJ edition represented a further reduction in the memory load of the Gregg system. Textbook analyses have been conducted which analyzed the materials of this edition as they related to high-frequency words.

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[32]John Robert Gregg, Louis A. Leslie, and Charles E. Zoubek, Gregg Shorthand--A Presentation of System Changes (New York: Gregg Publishing Division, McGraw-Hill Book Co., 1963), p. 1.

Richards analyzed contextual materials from 13 shorthand systems, including Diamond Jubilee, and concluded that words were not presented in relationship to their frequency of use in business communications. Studies by Vawdrey and Reese and Smith analyzed beginning high school textbook materials of this edition using high-frequency word lists. The researchers concluded that no attempt had been made to control textbook vocabulary. Words did not appear to be introduced or reinforced by any consistent pattern, and more of the high-frequency words could have been used in illustrating and reinforcing principles. A criticism of the Reese and Smith study was that the textbook materials of only one system had been studied, which lead to a greater distortion of the system than if two or more systems had been compared. The Gallion and Kavan report represented a brief comparison of the Gregg DJ and SW Century 21 systems using high-frequency words. At the time of their report, only three randomly selected textbook lessons were analyzed for each system. No conclusions were drawn about the adequacy of the textbook materials at that time.

CHAPTER III

PROCEDURES

The purpose of this chapter is to describe the procedures used in the four major phases of the study: (1) analysis of the shorthand systems, (2) analysis of Mellinger's 1,000 most frequently used words, (3) analysis of running shorthand-countable words, and (4) analysis of the shorthand textbooks.

A. ANALYSIS OF THE SHORTHAND SYSTEMS

The purpose of this section is to explain how the shorthand principles of Gregg DJ and SW Century 21 were located and how the designation of principles "textually declared" or "textually undeclared" was assigned. A further purpose is to show the classification of principles within the major shorthand groupings as well as the determination of principles to be tallied. The classification of memory forms as common or unique to the systems is discussed.

Location of System Principles

The location of the principle was the source for determining if a principle were textually declared or textually undeclared. The procedures for locating and classifying principles are presented below:

Textually Declared Principles

Textually declared principles were defined as those principles readily available to the beginning student. This concept was interpreted to include the beginning shorthand textbooks of both systems and the

shorthand dictionaries. Both the high school and college-level shorthand texts of each system were used to locate the textually stated principles. The indexes of the beginning shorthand textbooks were used as the guideline and a page-by-page inspection was made of each of the beginning textbooks to assure inclusion of all textually stated principles.

The shorthand dictionaries of both systems were checked to see if additional principles were stated. At the beginning of the study, the only reference source available for SW Century 21 was 6,000 Most-Used Century 21 Shorthand Outlines.[1] When the full SW Century 21 dictionary became available, the principles stated in the dictionary were added to the textually declared list.

Although this study was limited to the college-level textbook, the high school textbooks were also checked to insure a complete listing of principles. The wording of the principles was checked, and sometimes a fuller explanation of a principle would be given in one text as compared with another. No preference was given to listing the principles from the college text when they appeared in both textbook levels.

Textually Undeclared Principles

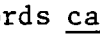
Textually undeclared principles were defined as principles stated in materials other than those readily available to the beginning student, i.e., the beginning textbooks and the shorthand dictionaries. Sources for textually undeclared principles included previous research studies, journal articles, promotional materials, as well as advanced shorthand textbooks

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[1]Edward L. Christensen and Devern J. Perry, 6,000 Most-Used Century 21 Shorthand Outlines (Cincinnati: South-Western Publishing Co., 1974).

of both systems. The rationale for including principles found in these sources as being textually undeclared is that these sources are not normally available to the beginning student nor are the principles taught in the beginning shorthand class, although their occurrence is evident and consistent within the system.

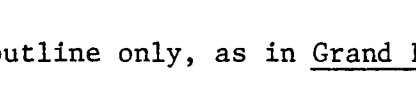
The advanced textbooks of both systems were checked for additional principles, and any such principle was added to the textually undeclared principles. To the student or teacher studying shorthand with only the basic textbook and reference material available, these principles are not available until they are further advanced in their studies. Those principles stated in an advanced-level textbook were included as textually undeclared principles. The principles occur throughout the system; but as this study analyzed the beginning college-level textbooks of both systems, they were included as textually undeclared.

An example of a principle stated in an advanced text is the statement of the monosyllable principle in the Gregg DJ speed building book: "The vowel usually inserted in a monosyllable is frequently omitted in longer words using the same phonetic combination."[2] An example of this principle would be the words car  and carbon  with the vowel omitted. What would seem to be an inconsistency in a system can be explained by knowledge of a principle not located in the beginning textbook or basic reference source. When such principles occurred in the advanced textbooks, they were tallied under the textually undeclared principles.

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[2] Robert L. Grubbs and Estelle Popham, Gregg Shorthand for Colleges, Speed Building, Diamond Jubilee Series (New York: Gregg Division/McGraw-Hill Book Co., 1976), p. 45.

Observed Principles

Observed principles were defined as principles not explicitly stated in textually declared or textually undeclared materials. Some recurring shorthand usages are not stated; however, they appear on a regular basis so as to be able to predict their occurrences in a word or words holding the same internal relationships. In SW Century 21, for example, capitalization is stated to occur as a short stroke below the last stroke of the outline, as in American  . However, in observing capitalization of cities with two separate outlines, the capitalization mark was found to be placed after the last outline only, as in Grand Rapids  .

Observations helped to interpret shorthand elements not explained in-depth or which could be viewed as inconsistencies within a system. The observations tallied are included with the textually undeclared principles. The sources of all textually declared and textually undeclared principles are stated in parentheses after the principle statement in the system descriptions of Appendix D.

Classification of Principles

The purpose of this section is to describe how the shorthand principles of the two systems were classified into major groupings. Within each major grouping the principles were classified as identical, similar, or unique. The determination of shorthand tally points is presented.

Major Groupings

To accommodate the two systems, some arbitrary groupings were made, such as miscellaneous shorthand principles and auxiliary rules. Wherever possible, the original identity of the grouping was held intact.

The following major groupings were made:

Theory Background

Vowels

Consonants and Digraphs

Bends and Blends

Word Beginnings--Disjoined

Word Beginnings--Joined

Word Endings--Disjoined

Word Endings--Joined

Miscellaneous Shorthand Principles

Writing and Joining Principles

Auxiliary Rules

Writing Accuracy and Precision Guidelines

The theory background grouping states the general concepts upon which the shorthand systems are based. This grouping was not considered in the determination of decision points of the systems. The vowels and consonants and digraphs groupings compared the shorthand alphabets and shorthand principles of each system within the groupings. With the theory background, vowels, and consonants and digraphs groupings, the phonetic guidelines and primary alphabets of the systems were given.

Beginning with the bends and blends grouping, the derived alphabets were discussed. The grouping bends and blends combined the blends of Gregg theory with that of bends and blends of South-Western theory.

The word beginnings and word endings were divided into joined and disjoined principles. These groupings were broadened to include other smaller groups which could appropriately fit into these categories. Word

compounds and proper name elements from SW Century 21 compatible with word beginnings--disjoined were grouped together. Ellipses were grouped into the word beginnings--joined, and appropriate Gregg geographical terminations were brought into the word endings--disjoined. Both South-Western and Gregg geographical terminations and proper name elements were brought into the word endings--joined grouping.

The miscellaneous shorthand principles grouping included principles that have a shorthand character written in some portion of the word. These principles did not fit into the previously listed categories. This section differed from the auxiliary rules grouping in that the auxiliary rules contained non-shorthand elements. These non-shorthand elements, however, were essential to a complete description of the two systems.

The writing and joining principles grouping presented rules for connecting shorthand symbols, whereas the writing accuracy and precision guidelines grouping related the penmanship practices. Joining principles require decisions by the writer that could be readily diagnosed as correct or incorrect by comparing the outline against the dictionary outline. Penmanship, however, is concerned with quality of writing and would require a judgment decision as to the accuracy of the outline. Thus, the writing accuracy and precision guidelines grouping was not tallied for decision points.

Wherever possible, principles were assigned to the original system's grouping. Cross referencing was used to show relationship to other principles and provide additional information.

Classification Within Groupings

After the major groupings had been determined, each grouping--other than the theory background grouping--was studied to ascertain those principles that were identical, similar, or unique within each grouping. The following criteria was used to determine these relationships:

Identical. Refers to the same part of the word and expresses it in the same way.

Similar. Refers to the same or alike part of the word but differs in expressing that part.

Unique. Does not refer to the same or similar parts of a word.

Each principle within a grouping was compared to these criteria and assigned to one of the three classifications.

Determination of Tally Points

After the ordering of the principles within the groupings was completed, the next step was to determine the principles to be tallied in the computation of the memory loads of the systems. As defined, the memory load of a word was considered to be made up of the decision points in that word. The decision points were determined by comparing the phonetics of the word and the written shorthand outline to the following two-part question:

(1) Can a dictionary-correct outline be written without knowledge of the specific principle?

(2) Can an alternative outline be written without knowledge of the principle?

The decision point was not tallied if a dictionary-correct outline could be written with only a knowledge of the basic shorthand alphabet of

the system. If the word could be written in an alternate form from the dictionary outline, a decision point was defined as occurring.

In SW Century 21, for example, a student could combine r and e from basic shorthand alphabet knowledge without knowing a re- principle existed. In Gregg DJ, however, r is sometimes written for the word beginning re-; and at other times, r-e is written. A knowledge of when to write r for re- is needed to be able to construct a dictionary-correct outline.

A conference was held at the 1975 National Business Education Association in Chicago with a SW Century 21 textbook author and a Gregg DJ textbook author. The purpose of this conference was to come to common agreement on the description of the systems' major groupings, classifications of the principles within the groupings, and the concept for determining decision points. The procedures presented previously reflect the results of the conference. As the study progressed, any principle observed to occur that had not been previously noted was added to the list following the guidelines agreed upon in the conference.

The detailed systems' description is presented in Appendix D. Principles not tallied as decision points are indicated by an asterisk at the beginning of the principle description. A full listing of decision-point principles is given in Tables E.1 and E.2 of Appendix E.

For the purpose of this study, the ng principle was not tallied in either system. SW Century 21 considers the stroke as part of the primary alphabet. As the ng principle applies to both systems equally and the spellings of words using the ng principle do not deviate from ng, it was not tallied.

Classification of Memory Forms

Memory forms were analyzed according to their commonalty and inclusion on the Mellinger word list. An alphabetized listing was made of the memory forms in each system with corresponding Mellinger word frequencies. The listings were compared and the memory forms divided into three groups: memory forms common to Gregg and South-Western; memory forms unique to Gregg; and memory forms unique to South-Western. The memory forms were summarized within the Mellinger word-frequency clusters according to these groupings.

B. ANALYSIS OF MELLINGER'S 1,000 MOST FREQUENTLY USED WORDS

The purpose of this section is to present the procedures for analyzing the Mellinger 1,000 most frequently used words. These procedures are discussed under five headings: (1) selection of words, (2) development and use of recording form, (3) coding of data, (4) use of computer, and (5) analysis of data.

Selection of Words

The words used in this phase of the study were the first 1,000 most frequently used words listed in Mellinger's Basic Vocabulary for Written Business Office Communications.[3] According to Mellinger, these 1,000 words represent 81.43 percent of the vocabulary of written business office communications.

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[3]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

Mellinger developed this list from nearly 2,000 letters, memoranda, and reports obtained from a solicitation of companies, schools, and non-profit organizations and institutions in 43 states. The solicitation was made according to the proportion of stenographers, secretaries, and typists in each occupational category of the 1960 census. The number of total words in his sample was 295,271, which produced 12,897 separate words.

Neither shorthand system used the Mellinger listing as a basis for determining memory forms, abbreviated/contracted words, principles, or textbook materials. Therefore, the use of this listing does not present a built-in bias favoring one system over another.

An alphabetical computer listing of the 1,000 words showed the word club appeared twice: words assigned rank order Nos. 774 and 816. The second occurrence of the word was deleted (No. 816). Therefore, all the totals for the 1,000 word section show a figure of 999 words instead of 1,000 words.

Development and Use of Recording Form

The recording form for the 1,000-word analysis was developed to allow direct keypunching from the data sheets onto computer cards. The initial information placed on the recording forms included the Mellinger rank order of the word, the word itself, and the Mellinger frequency. This information was typed directly from the Mellinger book, and the word listing was double spaced to allow room for recording the phonetic pronunciations of the words.

Space was left in the second portion of the recording form to write the shorthand outlines of each system as reference in filling out the rest of the form. The third part of the recording form included the syllabic intensity and the stroke counts of the words. The fourth section involved the method of writing with the designation of words into alphabetic, abbreviated/contracted, memory forms, and shorthand theory words. The last section was designated for a listing of the shorthand principles applied in each system. This section was mentally divided into thirds: the left-hand third for listing textually stated principles excluding joining principles; the right-hand third for joining principles and textually undeclared principles; and the middle third primarily for auxiliary rules. A sample recording form is shown in Appendix A.

Coding of Data

In this section the procedures for coding and proofing the data are presented.

Computerized Listing of Words

The first step in analyzing the words was to type the rank numbers of the words, the words, and the Mellinger frequencies of the words onto the recording forms. After this information was proofed, it was keypunched onto data cards.

A short computer program was written to provide a printout of the 1,000 words in front and reverse alphabetic order along with the rank numbers of the words. This computerized listing was used throughout the data coding phase to study the formation and consistency of outlines within the 1,000-word grouping as well as to check word endings and word beginnings.

Coding Procedures

Shorthand outlines. After the rank numbers, words, and Mellinger frequencies were typed on the forms, the Gregg and South-Western shorthand outlines were written after each word. The outlines were compared with each system's shorthand dictionary. At the beginning of this study, the only available reference was the 6,000 Most-Used Century 21 Shorthand outlines. Outlines not in the reference were checked with the consulting South-Western textbook author. When the complete dictionary became available, these outlines were confirmed with the dictionary.

Phonetic guidelines. As the two systems used different dictionaries for phonetic guidelines, pronunciation guides were written below some words. Webster's Seventh New Collegiate Dictionary,[5] based on the Webster's Third International Dictionary, was the source for checking the Gregg outlines. The third and fourth editions of the Thorndike-Barnhart High School Dictionary[6] were the sources for checking the South-Western outlines. On the recording forms, a "W" appeared before the Gregg phonetic guidelines and a "B" before South-Western phonetic guidelines.

In SW Century 21 the words separate and appropriate have dual outlines dependent upon their use as adjectives or verbs. The outlines used in this phase of the study followed the first phonetic guidelines listed in the Thorndike-Barnhart dictionary.

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[4]Christensen and Perry.

[5]Webster's Seventh New Collegiate Dictionary (Chicago: Rand McNally & Co., 1967).

[6]E. L. Thorndike and Clarence L. Barnhart, eds., High School Dictionary, 3rd ed. (Chicago: Scott, Foresman and Co., 1962); and E. L. Thorndike and Clarence L. Barnhart, eds., High School Dictionary, 4th ed. (Glenview, Ill.: Scott, Foresman and Co., 1965).

Syllabic intensity. Syllabic intensity of the words was determined using Webster's Seventh New Collegiate Dictionary.

Stroke count. Only shorthand countable strokes were determined. Those shorthand strokes made up of the primary and derived alphabets as well as the auxiliary grouping strokes were counted. Numerals written in figures were not included in the stroke tally. A pen lift was counted as one stroke. Each alphabetic character was counted as one stroke with bends and blends also counting one stroke. Combining of the two alphabetic symbols in oi, oy and ow, ou counted two strokes. The listing of shorthand stroke counts is given in Appendix A.

Method of writing. Each word was classified by the method of writing: alphabetic, abbreviated/contracted, memory form, memory form derivative and/or shorthand theory words. The classifications of alphabetic, abbreviated/contracted, memory, and memory form derivatives were mutually exclusive. A word could be classified abbreviated/contracted, memory, or memory form derivative and also contain shorthand principles. Any use of a textually listed principle was shown by a check in the shorthand principles column (shorthand theory words).

1. Alphabetic words. If the word was alphabetic, no shorthand principle was used in that word. Joining and auxiliary groupings and the textually undeclared principles were recorded independently of the method of writing. A word could be checked as "alphabetic" (written in full) yet show a joining principle and/or a textually undeclared decision point since the method of writing was concerned only with the word classification.

2. Abbreviated/contracted words. The words designated by Gregg as abbreviated words and by South-Western as contracted/correspondence forms

were included in this category. Each word was checked for use of shorthand principles following guidelines for checking memory form words presented below.

3. Memory forms and derivatives. Memory forms and memory form derivatives were designated in the memory column. A memory form derivative was shown in Gregg as a "D" (derivative), and a memory form related outline in South-Western as an "R" (related). Memory forms and derivatives that included a textually stated shorthand principle were checked in the memory and shorthand principle columns, with the shorthand principle identified by number.

All memory forms containing shorthand principles were checked for their points of introduction in the textbook. This point was compared with the point of introduction of the shorthand principle. If the shorthand principle was introduced in the same lesson as the memory form or in a preceding lesson, the principle was considered to be a component of the memory form outline. If the memory form was introduced in a lesson prior to the lesson introducing the shorthand principle, however, the memory form was considered to be made up of the basic alphabetic character. In the Gregg textbook, for example, the brief form company was introduced in Lesson 19. The com- principle was introduced in Lesson 20, therefore, the brief form company was considered to be made up of the k alphabetic stroke rather than the com- principle.

Principles: declared and undeclared. To facilitate coding and keypunching, three-digit numbers were assigned to each principle. The following numbering system was developed for the textually declared principle groupings:

100's Blends and Bends

200's Consonants and Digraphs

300's Vowels

400's Word Beginnings--Disjoined

500's Word Beginnings--Joined

600's Word Endings--Disjoined

700's Word Endings--Joined

800's Miscellaneous Shorthand Principles

900's Writing and Joining Principles

000's Auxiliary Rules

The textually undeclared principles were identified by a zero preceding a two-digit number. Although an attempt was made to keep the undeclared principles numbered in the same groupings as the textually declared, it was not possible to achieve as some undeclared groups contained more than ten principles. The numbers ranged from 011 through 079 for Gregg and 011 through 071 for South-Western. Where possible, groupings followed the listing above, such as 010's for bends and blends and 020's for consonants and digraphs.

If an overlap between a textually declared principle and a textually undeclared principle occurred in a word, the textually stated principle was recorded in lieu of the undeclared principle. The rationale for this procedure was that the outline could be written correctly with knowledge of the textually stated principle. If a word contained two occurrences of a principle, only one occurrence was recorded.

Minor vowel procedure. To determine the occurrences of the Gregg minor vowel principle accurately and consistently, the principle had to be clarified for the purpose of this study. The Gregg textbook states the principle: "When two vowel sounds come together, the minor vowel may be omitted."[7] Textbook examples of the minor vowel principle and their phonetics include:

period	pir-ē-*d
previous	prē-vē-*s
situated	sich-*-wāt-ed
ideal	i-dē-(-*)l

The following minor vowel procedure was established:

1. Each word, including one-syllable words, where two vowels occurred together were checked for a minor vowel occurrence.

2. If a specific shorthand principle was used in the two succeeding vowels (ia, ea, ow, ual, etc.), the occurrence of that principle took precedence over the minor vowel principle.

3. The occurrence of a minor vowel in addition to another shorthand principle was tallied. For example, the word graduated (graj-*-wāt) contains a minor vowel and the ted principle.

4. Checking for the minor vowel:

   a. The phonetic spelling of the word was checked in the dictionary and written under the word on the recording form.

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[7]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973), p. 193.

b. A minor vowel occurred when the minor-vowel sound was pronounced or shown as an unstressed (schwa) pronunciation, but the vowel was not written in the shorthand outline.

c. The minor vowel was checked as a shorthand principle, not as an alphabetic word.

5. A word containing two succeeding vowels was not considered to contain a minor vowel if any of the following occurred:

a. same double letters, such as steel (stē(*)l)

b. one-sounding double letters, such as school (skül)

c. succeeding vowels occurred in a brief form or brief form derivative, such as experience (ik-sper-i-*ns)

Proofing the Data

After the words had been categorized by method of writing and shorthand principles used, the words were proofed according to the following groupings:

1. Methods of writing
2. Shorthand principles: 100-800's and 000's
3. Joining principles: 900's
4. Textually undeclared principles: 010-080's

Each grouping (shorthand principles, joining principles, and textually undeclared principles) was identified and checked two times for accuracy. As a final check of all decision points, the 1,000 words were reviewed individually for agreement and overlap among the groupings. Each system was checked three times for each group of decision points and once for a final coordination check.

Use of Computer

In this section the data card layout and keypunching procedures are discussed. The computer programs for the 1,000-word analysis are discussed along with the procedure for checking sample data. The data was prepared for analysis by an IBM 370/158 computer on the campus of Auburn University.

Data Card Layout

In the 1,000-word analysis, one IBM card was prepared for each word. Column 6 was designated for a sequential card number. Although sequential cards were unnecessary for the 1,000-word analysis, the 3,000 running shorthand-countable words analysis required sequencing. A second card option was necessary to assure enough available columns to keypunch the shorthand principles within the words. The complete data card layout is presented in Appendix A. A description is given of the data assigned to each field.

Keypunching Procedure

A program card was prepared to facilitate automatic keypunching operations. A "1" was punched automatically into Column 6 to designate the first card for that word. Cards were punched directly from the recording forms using the data card layout designations. After the cards were punched, a card-image computer printout was obtained for proofing the punched cards. The cards were proofed three times using revised printouts. Sample card-image computer printout pages of completed data cards are shown in Appendix A.

Computer Programs

Two major computer programs were written to summarize the data of the 1,000-word analysis. Each of these programs was proofed using sample data.

Statistical Analysis System (SAS) program. The SAS program is a computer program package language designed and implemented by Anthony Barr and James Goodnight at North Carolina State University. A program utilizing the SAS package was written to obtain a listing of the words by methods of writing and principles used. The program listed the words by principles and methods of writing with the rank number, syllabic intensity, and stroke count of each word listed. The bulk of the listing prohibits including the entire printout in the appendix. Sample printout sheets for Gregg and South-Western are given in Appendix A.

PL/1 program. The major analysis of the 1,000 words was completed using a PL/1 program. Skeleton tables were developed for the 1,000-word analysis which included the title and column and side headings. These skeleton tables provided the guidelines for programming and layout of the completed tables. These tables represent finalized tables Nos. 5.1 to 5.12 in Chapter V.

The skeleton tables were the source for proofing the computer program using sample data. A sample was selected from the 1,000 words which consisted of words chosen to distinguish the cumulative word divisions, i.e., 10, 50, 100, 200, etc. For each cumulative word division, at least one word at the beginning, one in the middle, and one at the end of the word division were included. Forty-six sample words were obtained for this purpose. Another twenty successive words were selected at the 500-word

unit (Nos. 501-520). These additional words were selected to provide enough sample data to check each phase of the computer program.

The raw-score formula for the sum of squares as stated by Popham and Sirotnik[8] was used in the computer program:

$$\Sigma x^2 = \Sigma X^2 - \frac{(\Sigma X)^2}{N}$$

where

Σx^2 = the sum of squared deviations

ΣX^2 = the sum of squared raw scores

ΣX = the sum of raw scores

N = the number of cases in the distribution

The formula for the variance as given by Popham and Sirotnik[9] was used:

$$s^2 = \frac{\Sigma x^2}{n - 1}$$

where

s^2 = the variance of a set of scores

Σx^2 = the sum of the squared deviations

n = the number of cases in the distribution

The computer sum of squares was calculated on each cumulative word grouping. The variances, means, and frequencies were used in analyzing the data by _t_ tests.

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[8] W. James Popham and Kenneth A. Sirotnik, Educational Statistics, Use and Interpretation, 2nd ed. (New York: Harper & Row, Publishers, 1973), pp. 18-19.

[9] Ibid., pp. 19, 56.

Using the sample data, the values for each skeleton table were figured by hand and inserted into the tables. The hand tallies and averages were compared to those of the sample computer data. Several computer program revisions were required before the program was debugged.

After the sample data program was debugged, the entire 1,000-word program was run. The results were summarized according to the cumulative word units for each table. In addition to the averages and percentages, all cumulative raw figures were listed on the printouts. The 1,000-word computer program read 2,073 cards and printed 136 pages.

Analysis of Data

This section discusses data presentation sequencing and statistical analysis of the data. The following procedures are discussed: (1) the plan of data analysis, (2) weighted Mellinger frequency procedure, (3) the Significance of a Difference Between Proportions test, (4) the chi-square test and (5) computation of *t* tests.

Plan of Data Analysis

The data from the 1,000-word analysis is organized into 12 tables (Tables 5.1-5.12). In Tables 5.1 through 5.7, two levels of analysis occur. The first level (Tables 5.1-5.3) gives the broader base of methods of writing by the cumulative word groupings; the second level (Tables 5.4-5.7) breaks out the shorthand principle categories by cumulative word groupings. Except for the principles listed and used table (Table 5.4), a uniform sequencing occurs within each level: frequency count, syllabic intensity, and stroke count.

The syllabic intensity and stroke count of words in the first 100, 500, and 1,000 Mellinger word groups are summarized in Tables 5.8 to 5.10.

The conversion of methods of writing and principle frequencies into Mellinger-based percentages is summarized in Tables 5.11 and 5.12 for Gregg DJ and SW Century 21, respectively. The procedure for determining these percentages is stated in the following paragraph entitled "Weighted Mellinger Frequencies Procedure."

Weighted Mellinger Frequencies Procedure

To determine the percentages of weighted Mellinger frequencies as they occurred in Tables 5.11 and 5.12, a tally of the words and the Mellinger frequencies for each word was obtained. The Mellinger frequency represents the frequency of occurrence of a word in the letters, memoranda, and reports used in the Mellinger high-frequency word listing. If all words in Mellinger's list were added by their frequencies of occurrences and converted to percentages, each percentage would represent the proportion of a word's occurrence in the entire Mellinger data source. These percentages provide a model showing the percent of use of a word in the business communications analyzed by Mellinger.

To extend this concept to the present study a "weighted" frequency was obtained to show the proportion of usage of the Mellinger high-frequency words as they are written in each system. The weighted frequency was obtained by summing the Mellinger frequency count for each word by method of writing and/or shorthand principles. If two methods of writing were used or two or more shorthand principles used, the word was counted in each category. For example, word ranked No. 495, construction, occurred

67 times in Mellinger's study and contained four decision points in the Gregg DJ outline: a 503, com- con-; a 722, -tion; a 914, comma s before sh, ch, j; a 036, vowel omitted in -tract, -trict, -truct. The 67 frequency was added to each of these shorthand principles in the weighted frequency column. Also, for example, word ranked No. 482, proper, occurred 70 times in Mellinger's study. As this is an alphabetic word with no joining principles, the frequency of 70 was added to the alphabetic method of writing weighted frequency column. The percent of weighted frequency, then, was obtained by converting this weighted frequency into percentages.

By adding the occurrences of each shorthand principle and/or method of writing, a model was developed depicting the proportion of usage of each principle and method of writing in the 1,000 most frequently used words as they were written in each system. The proportion of usage concept was extended in this study to include joining principles and textually undeclared shorthand principles.

The words, weighted Mellinger frequencies, and weighted percentages are presented in Tables 5.8 and 5.9 by three cumulative word groupings: first 100 words, first 500 words, and the first 1,000 most frequently used words. Only the summary frequencies for the principle groupings (listed as theory word categories) are presented in Tables 5.8 and 5.9. The word frequencies, weighted Mellinger frequencies, and weighted percentages for the individual principles are listed in Appendix E.

Significance of a Difference Between Proportions Test

The Significance of a Difference Between Proportions[10] test was applied to the principles listed for each system and the principles used by each system in writing the first 1,000 Mellinger words. This test is designed to allow the comparison of proportions, in percentages, to determine if the observed difference in relative frequencies is indicative of a real difference between two portions or a difference attributable to chance.

The formula for computing the test is:

$$T = \frac{D - 0}{s_{p_1 - p_2}}$$

where

$$\bar{p} = \frac{n_1 p_1 + n_2 p_2}{n_1 + n_2}$$

and where

$$s_{p_1 - p_2} = \sqrt{\frac{\bar{p}\bar{q}}{n_1} + \frac{\bar{p}\bar{q}}{n_2}}$$

with

D = the difference in proportions $(p_1 - p_2)$

n = the total number of independent events

$\bar{q} = 1 - \bar{p}$

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[10] Frederick C. Mills, Statistical Methods, 3rd ed. (New York: Henry Holt and Co., 1955), pp. 223-226.

Chi-Square Test

The chi-square (χ^2) test of significance[11] was applied to both the methods of writing frequencies of each system as well as the theory category frequencies of each system. The chi-square test is designed to detect significant differences between the category proportions of two independent groups in terms of the probability that an observed proportion is a chance departure from an expected proportion.

The formula for computing the chi-square is:

$$\chi^2 = \sum \frac{(\text{Observed frequency} - \text{Expected frequency})^2}{\text{Expected frequency}}$$

Computation of t Tests

The t test as described by Popham and Sirotnik was used to interpret the data where appropriate. The t test determined if the difference between the means was attributable to chance or to a significant difference between the means. Popham and Sirotnik presented a fourfold scheme for determining the t formula to use and the degrees of freedom to employ:

> When $n_1 = n_2$ and $\sigma_1^2 = \sigma_2^2$: Use separate or pooled variance formula with degrees of freedom equal to $n_1 + n_2 - 2$. . . .
> When $n_1 \neq n_2$ and $\sigma_1^2 = \sigma_2^2$: Use pooled variance formula with degrees of freedom equal to $n_1 + n_2 - 2$.
> When $n_1 = n_2$ and $\sigma_1^2 \neq \sigma_2^2$: Use pooled variance formula or separate formula with degrees of freedom in each instance equal to $n_1 - 1$ or $n_2 - 1$. . . .
> When $n_1 \neq n_2$ and $\sigma_1^2 \neq \sigma_2^2$: Use separate variance formula with tabled t value for a given level of significance determined by averaging t values for (a) degrees of freedom equal to $n_1 - 1$ and (b) degrees of freedom equal to $n_2 - 1$.[12]

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[11] Popham and Sirotnik, pp. 284-291.

[12] Ibid., p. 141.

To determine if $\sigma_1^2 = \sigma_2^2$, the F-ratio test was performed on each set of variances to see if the variances were homogeneous. The t tests were computed according to the guidelines presented above.

The formulas for the pooled and separate variance models are given below:[13]

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Separate Variance Model

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Pooled Variance Model

where

t = the value by which the statistical significance of the mean difference will be judged

X_1 = the mean of group 1

X_2 = the mean of group 2

s_1^2 = the variance of group 1

s_2^2 = the variance of group 2

n_1 = the number of subjects in group 1

n_2 = the number of subjects in group 2

A t test was not computed on any mean with a frequency of two or less.

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[13] Ibid., pp. 125, 129.

C. ANALYSIS OF RUNNING SHORTHAND-COUNTABLE WORDS

The purpose of this section is to present the procedures used in analyzing 3,000 running shorthand-countable words. These procedures are discussed under the following headings: (1) selection of running countable words and recording form usage, (2) coding of data, (3) use of computer, and (4) analysis of data.

Selection of Running Shorthand-Countable Words and Recording Form Usage

A non-biased source of letter-structured copy likely to contain as many of the Mellinger 1,000 words as possible was sought. This copy was to be used to observe the differences between the two shorthand systems on the basis of running, or continuous, copy.

The current high school and college beginning typewriting textbooks from the Gregg Division/McGraw-Hill Book Company[14] and the South-Western Publishing Company[15] were selected as the sources of the running countable

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[14]John L. Rowe, Alan C. Lloyd, and Fred E. Winger, Typing 300 Volume One: General Course, 5th ed. (1972), Typing 300 Volume Two: Vocational Course, 5th ed. (1973) (New York: Gregg Division/McGraw-Hill Book Co.); and Alan C. Lloyd, John L. Rowe, and Fred E. Winger, Typing 75: Basic, 3rd ed. (1970), Typing 75: Advanced, Typing 75: Expert, and Typing 75: Professional (1971) (New York: Gregg Division/McGraw-Hill Book Co.).

[15]D. D. Lessenberry et al., Century 21 Typewriting, Complete Course, (Cincinnati: South-Western Publishing Co., 1972); and D. D. Lessenberry, S. J. Wanous, and C. H. Duncan, College Typewriting, Intensive Course, 8th ed. (Cincinnati: South-Western Publishing Co., 1970).

words. Letters containing 100-125 words were numbered sequentially, and a list of random numbers was used to select seven letters from each textbook level. Approximately 750 words were selected from each text.

Selection of the letters began at a point in the textbooks after all typewriter keys had been introduced. No straight copy used for three- or five-minute timed writings was included nor was copy included which was designed to emphasize special keys. The initial selection yielded 1,515 words from the South-Western textbooks and 1,557 words from the Gregg textbooks. This copy was corrected to running countable words. All words or numbers not containing a shorthand character were eliminated from the count. After conversion of the copy to running countable words, 1,498 words remained from the South-Western textbooks and 1,537 from the Gregg textbooks. As the word count stopped at exactly 3,000 words, 35 words were dropped from the last group.

The copy was keypunched onto data cards with each card containing as many words as could be punched without carrying over a portion of a word to the next card. Each letter was started on a new card. A sample of the running copy is included in Appendix B.

The recording form used in the 1,000-word analysis was used in the running-copy analysis for words not included in Mellinger's 1,000 words. No changes were necessary in the recording form to analyze the 3,000 running countable words.

Coding of Data

The basic coding procedures outlined in the 1,000-word analysis were followed in the running-copy analysis. This section presents the additional coding procedures required to handle the 3,000 running countable words: (1) listing of words beyond the first 1,000; (2) coding words to accommodate both systems, and (3) proofing the words.

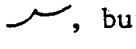
Listing of Words Beyond the First 1,000

A short PL/1 computer program was written to list those words in the 3,000 running words that did not occur in the first 1,000 Mellinger words. This alphabetic listing produced an additional 458 words with the words numbered consecutively beyond the 1,000 words. The 458 additional words and the 1,000 words were compared for duplicates. Five of the 458 additional words, mainly city names, (Nos. 1064, 1142, 1162, 1210, 1340) were merged with other words for coding purposes. One abbreviation No. (No. 1240) was deleted and the running copy repunched as number to reflect the 1,000-word listing.

Coding Words to Accommodate Both Systems

The additional words were analyzed using the procedures established for the 1,000-word analysis. However, some coding changes were made to accommodate the writing patterns of the two systems.

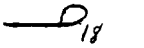
City names. Where necessary, two-part city names were punched together in the running copy and coded as one word on the worksheet to eliminate such problems as:

(1) Fort Worth. In SW Century 21, worth is a speedform written , but the city of Fort Worth is written  .

(2) New York. In Gregg DJ, new is written  on the 1,000-word list but is written as  when writing New York.

The worksheets reflect the differences when one system writes the two names together and another does not. This accounts for the large number of shorthand strokes obtained in the stroke count tables in this phase of the study.

Capitalization. Capitalization in Gregg DJ is represented by two short strokes following the outline and in SW Century 21 by one short stroke following the outline. Capitalization of two-part outlines differs in the two systems, and dates may or may not require capitalization marks:

	Gregg DJ	SW Century 21
St. Louis		
May 18		

Stroke counts for capitalization were hand tallied in the running copy. Other points of punctuation were not considered.

Syllabic intensity. Syllabic intensity of shorthand-countable words involving figures or symbols were based upon the word containing the shorthand element rather than the figure. For example:

Word No. 1456: 1,000, syllabic intensity based on thousand

Word No. 1001: $25, syllabic intensity based on dollars

Proofing the Data

After the additional words had been categorized by method of writing, shorthand principles used, stroke counts, and syllabic intensity, the words were checked using the proofing procedure of the 1,000-word analysis.

Use of Computer

The data card layout, keypunching procedures, and computer programs used in the 3,000 running shorthand-countable words analysis are described in this section.

Data Card Layout

The data card layout as presented in the 1,000-word analysis was used. The second card option, however, was utilized in the analysis of the additional words.

Keypunching Procedures

In addition to coding changes on the worksheets, several keypunching decisions were made regarding the punching of the running shorthand-countable copy.

Dual words. In the 3,000 running countable words, two words had alternate shorthand outlines dependent upon the use of the word: percent and cents. In Gregg DJ, percent is written  , or if a figure is used with the word,  ; in SW Century 21, the outlines are  and  . Cents is written  in Gregg DJ regardless of a figure; however, in SW Century 21, the outlines are  and  , dependent upon the use of a figure. These alternate shorthand patterns produce different shorthand stroke counts as well as different shorthand principles.

To distinguish between the alternate outlines, for keypunching purposes, the occurrence of cents and percent with a figure was punched centsx and percentx respectively in the running copy. Thus, as the running words were read by the computer, they were tallied under the appropriate

usage with the differences in stroke counts and shorthand principles incorporated into the tables. As the Gregg DJ outline for cents does not change in either writing situation, the program tallied cents and centsx the same for Gregg DJ shorthand.

No adjustments were necessary for the dual SW Century 21 outlines of separate and appropriate as these words did not occur in the running copy.

Compound words. Compound words were normally punched as one unit; for example, overcharge, self-explanatory, notwithstanding, someone. If, however, a hyphenated expression occurred using a compound word or element, the expression was punched as separate units. Expressions such as over-the-board and under-the-table were punched as three words each.

Possessives. Possessive apostrophes were deleted where appropriate to reflect the plural form of outlines in the Mellinger first 1,000 words. A plural word outline, such as months, is the same as the singular possessive form, month's. As the outline is written the same in shorthand, the possessive was deleted to reflect the occurrence of the shorthand outline.

Computer Programs

Two computer programs were used in the analysis of the 3,000 running shorthand-countable words. These involved a SAS program listing the methods of writing and shorthand principles used and a major PL/1 program.

SAS program. The SAS program written for the 1,000-word analysis was used to obtain a listing of each word by method of writing and shorthand principles used by each system. Only the words not on the 1,000-word list were included. Sample card-image computer printout pages of

completed data cards in Appendix B show the use of the second card on word No. 1419 unprecedented and the provision for the dual words centsx listed at the last of the printout. The 548 computer cards read for this program produced a 100-page computer printout of the listings.

PL/1 program. Skeleton tables were developed for the running-copy analysis. These skeleton tables provided the guidelines for computer programming and layout of the completed tables as well as the proofing source for the computer program using sample data.

The first portion of the program recorded the methods of writing and shorthand principles used for each successive 100-word group of running words. These frequencies were used to check the stabilization of rankings with the addition of each 100 words. To check this portion of the program using sample data, the sample was broken down into ten-word units and later changed to 100-word units for the running of the full program.

The first 100 words of the 3,000 running words were used as the running-copy sample. These 100 words were typed in running-copy form on sheets of ruled paper. Space was left between each line to count the principles and methods of writing in the sample words. Words were counted off in ten-word units. Twenty words were chosen from the running-copy sample for analysis of their methods of writing and shorthand principles.

A worksheet was prepared to show the occurrence of each of the 20 sample words in each of the ten-word units. The worksheet also indicated the method of writing and shorthand principles used in each of the 20 sample words as well as stroke counts and syllabic intensities. Thus,

totals were obtained of the times the words were used, stroke counts, syllabic intensities, shorthand principles and methods of writing used. These figures were used to complete the skeleton tables. The formulas used for the sum of squares and variance were the same as used in the 1,000-word analysis.

Once the sample had been checked, ten additional words were added to the beginning of the running-copy sample to check the ability of the program to tally dual words. The two sets of dual words were also checked by hand against the computer program.

The sample tables represent finalized Tables Nos. 5.13 to 5.20 in Chapter V. Several revisions of the program were necessary before it was debugged. The computer program contained 1,425 cards and produced 246 computer-printout pages. The volume of printout pages is accounted for by the printout of raw data.

Analysis of Data

This section presents the procedure for ranking stabilizations and the plan of data analysis.

Ranking Stabilizations

Listings A and B of the PL/1 program were used to determine the ranking of words by methods of writing and shorthand principles used in each successive 100-word group. The purpose of ranking each system was to ascertain if additional words, as they were added to the running copy from the typewriting textbook sources, changed the rankings of (1) methods of writing and (2) shorthand principles used.

A large worksheet was used to show the cumulative word groups in increments of 100-word groups. Alphabetic, abbreviated/contracted, memory forms, and memory form derivatives from Listing A were recorded for each cumulative grouping and rankings were established. Next, the shorthand theory words from Listing B were recorded by the major shorthand principle categories of blends and bends, consonants, vowels, word beginnings--disjoined, word beginnings--joined, word endings--disjoined, word endings--joined, miscellaneous, joinings, and undeclared principles. Rankings were established for each cumulative 100-word group. Tables B.1 and B.2 of Appendix B present the cumulative frequencies and rankings obtained from each of the listings.

For Gregg DJ shorthand, rankings by methods of writing and shorthand principles used were stabilized by 2,500 running words. The methods of writing groups did not change rankings at any time during the cumulative word count. Most of the shorthand principle groups stabilized early in the word count with the word beginnings--joined and word endings--joined frequently exchanging the ranks of four and five. Consonants and vowels were the last groups to stabilize with an exchange of the sixth and seventh rankings several times.

For SW Century 21 shorthand, all rankings for methods of writing and shorthand principles used were stabilized by 500 running words. The methods of writing groups, as with Gregg DJ, did not change rankings at any time during the cumulative word count. The vowels, joinings, and undeclared principle groups did not alter their rankings at any time. As all groups stabilized in Gregg DJ by 2,500 running words and SW Century 21 by 500 running words, no additional words were added beyond the original 3,000 running shorthand-countable words.

Plan of Data Analysis

The data from the 3,000 running shorthand-countable words is summarized into eight tables (Tables 5.13-5.20) in Chapter V. Two levels of analysis occur. The first level (Tables 5.13-5.15) gives the broader base of methods of writing; the second level (Tables 5.16-5.19) presents the shorthand principle categories. Except for the principles listed and used table (Table 5.16), a uniform sequencing occurs within each level: frequency, syllabic intensity, and stroke count. The syllabic intensity and stroke count of the 3,000 running shorthand-countable words in each system are summarized in Table 5.20.

D. ANALYSIS OF THE SHORTHAND TEXTBOOKS

The purpose of this section is to explain the procedures for analyzing the shorthand textbooks using the first 1,000 Mellinger words. These procedures are discussed under the headings of: (1) selection of textbooks, (2) use of computer, and (3) analysis of data.

Selection of Textbooks

The beginning college shorthand textbooks of each system were analyzed. These included: Century 21 Shorthand, Theory and Practice by Irol Balsley[16] and Gregg Shorthand for Colleges, Diamond Jubilee Series by Louis A. Leslie, Charles E. Zoubek, A. James Lemaster, and Russell J. Hosler.[17]

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[16]Irol W. Balsley, Century 21 Shorthand: Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[17]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973).

Use of Computer

This section describes the data card Layout, textbook keypunching procedures, and the computer programs written to analyze the data.

Data Card Layout

Two sets of data cards were used in the textbook analysis. The first set was the first 1,000 Mellinger words, and the second set was the contents of the two textbooks punched onto computer cards.

Mellinger's first 1,000 words. The cards for the 1,000 words from the 1,000-word analysis phase of the study were used as the data set for analyzing the textbooks. The procedures for analyzing, coding, and keypunching Mellinger's first 1,000 words were presented in the 1,000-word section of the study.

Textbook copy. The shorthand-countable words in the lesson-structured copy of the two beginning college shorthand textbooks were keypunched onto 80-column data cards. The textbook words were punched in succession across a card ending with the last complete word that could be punched on the card. This procedure was chosen to make corrections easier and to reduce the number of cards necessary to repunch a correction. Approximately 8,000 data cards were required to accommodate the two textbooks.

Three running tallies were kept on each textbook: connected-copy words, presented words, and total words. A coding system was used to distinguish the tallies. A cross in the first column indicated presented words, and an asterisk in the first column indicated connected-copy words. The total-copy tally was a count of all words as they occurred.

Each time a change from connected copy to presented words occurred, a new card was started with the code punched in the first column.

Textbook Keypunching Procedures

The textbook copy was punched in shorthand-countable words using the same guidelines for determining shorthand-countable words as given in the coding and keypunching sections of the running-copy phase of the study. For the textbook copy, this procedure primarily involved three points:

1. No punctuation was keypunched as the 1,000 words contained no punctuation elements.

2. Numbers not on the 1,000-word list were punched only if a shorthand character occurred in the writing of that number.

3. Abbreviations written in longhand were not punched.

Basically, to be considered a shorthand-countable word, the outline for a word had to contain a shorthand character. The shorthand outline, then, was the indicator of how the word was to be punched.

The textbook words were punched using both the shorthand transcripts and the textbooks. These sources were constantly compared for coding changes between presented words and connected copy as well as the structure of the shorthand outlines. Mellinger's book was used to check the nature of hyphenated words, possessives, numbers, abbreviations, and contractions in the first 1,000 words. As the occurrences of Mellinger's first 1,000 words within each textbook were being compared, these 1,000 words were held intact. Keypunching guidelines were established to accommodate analysis of two systems simultaneously as well as assuring that words were punched to reflect the shorthand outline.

Hyphenated expressions. To tally shorthand words and accurately pinpoint the introduction of these words in the textbooks, some modification of Mellinger's procedure for determining word count was necessary. For example, in the expression "money saving," if the expression occurred before the word as in "money-saving ideas," the expression "money-saving" was tallied in Mellinger's list with the hyphens as one word. Conversely, if the expression occurred after the noun as in "ideas were money saving," the words "money saving" were recorded individually under the separate words.

In keypunching the textbooks, however, if hyphenated expressions had not been considered as separate units, the occurrences of shorthand words would have been missed and the introduction points of shorthand words would have been shown to be later than their actual shorthand introduction. Also, some shorthand words could have appeared to be absent from the textbooks if they had been part of some hyphenated expression. Therefore, to pinpoint accurately the introduction of a shorthand word, whether it was free standing or in a hyphenated expression, and to achieve an accurate tally of a shorthand word's occurrence in the textbook, such hyphenated modifiers were punched as separate words. Compound words were punched following the procedures used in the running-copy analysis.

This keypunching procedure necessitated the adjustment of the Mellinger word list in the procedure for determining the absolute deviation of textbook word usage from Mellinger's indicated word usage. This adjustment is discussed under the absolute percentage deviation procedure.

Possessives. The procedure used in the running-copy analysis was followed. As the textbooks were punched, each occurrence of a possessive was checked against Mellinger's first 1,000 words. If the plural form of the

word was on the list and the shorthand outline was the same, the plural form was punched. Some of these included: week's to weeks, day's to days, customer's to customers, month's to months, teachers' to teachers, and area's to areas. Two sets of plural-possessive and contraction words occurred in the 1,000-word listing: (1) No. 599, companies and No. 934, company's; and (2) No. 122, its and No. 672, it's. As these words were on the 1,000-word list, they were punched in the textbooks as they occurred on the list, and the separate identities were maintained.

Other keypunching procedures. Any word in question was checked against the Mellinger list to see if it occurred in the 1,000 words. When punching from the shorthand transcript, the textbook was always checked to see how the outlines were written in shorthand. Other keypunching procedures to adjust the shorthand textbooks to Mellinger's list included:

1. Abbreviation No. in the shorthand transcripts was punched as number; however, "#" was not punched if used in that form in the textbook.

2. The abbreviation Dr. was punched as doctor.

3. Free standing numbers not on the 1,000-word list and not using shorthand outlines were not punched, such as, 14, seven, twenty-three.

4. Numbers not on the 1,000-word list requiring a shorthand character were punched in the form they occurred, such as, 100,000, 400, $140, and $1,000. The keypunching procedure provided tally of one shorthand word for those numbers using a shorthand character.

5. The free standing numerals "1 (one)" and "2 (two)" were punched as one and two in both systems if written in shorthand. Both systems have shorthand outlines for these figures.

6. The free standing numerals "3 (three)" presented a different situation. In Gregg DJ the numeral was written in shorthand and in SW Century

21 as the figure. As three is in the first 1,000 Mellinger words, the tally of this word was necessary even though SW Century 21 did not use a shorthand outline. The 1,000-word data card for this word reflected the difference. No shorthand strokes or principles were listed for South-Western. The SW Century 21 auxiliary rule of numbers above two written as Arabic numerals was recorded. Therefore, when the computer read three in the South-Western textbook, the use of the word was recorded under auxiliary rules but no shorthand strokes were tallied. When the word occurred in the Gregg textbook and was written in shorthand, the joining principles and the shorthand strokes were recorded. This reflected the theory intent of both systems.

7. The dual words percent and percentx (occurring with a figure) and cents and centsx (occurring with a figure) were punched according to the running-copy procedure.

8. The South-Western dual outlines for separate and appropriate were checked by hand since these outlines involved only one system. After the program was run, the computer listing of each occurrence of each word was checked to locate the words in the textbook. Only the use of the Thorndike-Barnhart second phonetic guideline required changes (separate as an adjective; appropriate as a verb). Changes were made by hand to the methods of writing tallies of Tables 6.5 and to the principles summarized by the theory categories in Table 6.6.

9. Cities were punched following the running-copy procedure.

10. If two or more meanings of a presented word were shown, the meanings were punched in the order of their occurrence.

11. Phrases were punched as separate words.

12. Two-letter state abbreviations and initials written in longhand were not punched.

13. Words reflecting Gregg's intersection principle were punched as one unit.

In determining the keypunching procedures, an attempt was made to reflect the intent of the shorthand principles and shorthand outlines. After each textbook was punched, a card-image printout was obtained; and this printout was used to proof the keypunching. Three proofings of each textbook copy occurred. A sample page of the card-image textbook printout is included in Appendix B for each textbook.

Computer Programs

Two programs were used in connection with the textbook analysis. The major program was a PL/1 program written to analyze the data gathered from the textbooks. A second PL/1 program entitled SEARCH was used to verify textbook keypunching.

PL/1 program. The major analysis of the textbooks was completed using a PL/1 program. Skeleton tables and listings were developed for the textbook analysis as guidelines for programming and table layouts. These skeleton tables represent completed Tables 6.1 to 6.9 in Chapter VI.

The computer program was developed in two phases. To check the accuracy of the computer program for the frequency of occurrences and places of word introductions, the 64 sample words from the 1,000-word program and sample textbook copy were used. The textbook sample was obtained by random selections of presented words and connected copy throughout the textbooks. The textbook sample was typed on lined paper with enough space to

allow three hand tallies: presented words, connected-copy words, and total words. The total words represented the continuous counting of words from the beginning of the sample to the end. The textbook sample yielded 132 presented words, 663 connected-copy words, and 795 total words. The textbook sample words were punched onto data cards and corrected using card-image printouts.

Next, the 64 sample words from the 1,000-word analysis were listed, and the frequencies of occurrences and the places of word introductions for these 64 words in the textbook sample was determined by hand. Each of the skeleton tables at the three levels of analysis was completed by hand for the sample. These levels included: cumulative word groupings, methods of writing, and shorthand principles used. The dual-words provision for cents and percent was added to the program and checked with sample data following the procedure in the running-copy analysis.

In running the full textbook program, each textbook was to be run through the computer at this point with the program storing the following: occurrences; places of introductions (presented words or connected copy); and points of introductions (actual word number in the presented words, connected-copy words, and the total-copy words). With this information stored in the computer, the data for the other procedures (points of introduction ratio and deviations from adjusted Mellinger frequency) could be pulled as a cross comparison was required of each of the 1,000 Mellinger words. These procedures are discussed in detail in the "Analysis of Data" section.

The basic PL/1 computer textbook program printed out 1,462 pages for Gregg DJ and 1,564 pages for SW Century 21. The large numbers result from the listings of the 1,000 words as they occurred in each textbook.

To check the additional computer programs for the two cross-comparison procedures, a second textbook sample had to be prepared. This sample yielded 675 words. Only the word-introduction points and the frequencies of occurrences of the 64 sample words from the 1,000-word listing needed to be checked within the textbook samples.

The second textbook sample of 675 textbook words was designated as the South-Western sample, and the first textbook sample of 795 textbook words was designated as the Gregg textbook sample. The sample data was computed by hand to check the finalized computer program. The sum of squares procedure as described in the 1,000-word analysis was used and also checked by hand.

SEARCH program. A short PL/1 computer program entitled SEARCH was written to search through the textbooks for designated words.

The SEARCH program checked each occurrence in both textbooks of the dual words percent and percentx (occurring with a figure) and cents and centsx (occurring with a figure). These occurrences were then located in each textbook and compared against the textbook copy to make certain the designations were correct. Several plural-possessive combinations and several cities were searched to check the consistency of keypunching.

Perhaps the greatest benefit from the SEARCH program was its ability to search the textbooks for the words from the 1,000-word list that did not appear in the major PL/1 program listings. All the words indicated as not

occurring in each shorthand textbook were searched through each textbook. The SEARCH program found no occurrences of these words.

Analysis of Data

This section presents the plan of data analysis and the procedures for the points of word introductions and the absolute deviations from adjusted Mellinger frequencies.

Plan of Data Analysis

The analysis of the textbooks is presented in Tables 6.1 to 6.13 of Chapter VI. The 1,000 Mellinger words listed and used are summarized in Tables 6.1 to 6.3 by cumulative word groups, methods of writing, and principles used. In Tables 6.4 to 6.6, the place of word introductions is presented by cumulative word groups, methods of writing, and principles used. The occurrences of the 1,000 words in the connected copy, presented words, and total-copy words for each textbook are indicated in Tables 6.7 to 6.9. The points of word introductions are summarized in Tables 6.10 and 6.11. The absolute percentage deviations from adjusted Mellinger percentages are presented in Tables 6.12 and 6.13.

Points of Word Introductions

A procedure was developed to study the initial points of introduction of the first 1,000 Mellinger words in the textbooks of the two systems. As these 1,000 words represent 81.43 percent of business communications, the assumption was made that the early introduction of these words in a textbook is a positive factor. As the points of introduction rather than a "rate" of introduction was being analyzed, the textbook lengths were not adjusted.

The total-copy point of introduction for each of the 1,000 words was determined in each textbook. A ratio of the earlier point of introduction over the later point of introduction was determined for each word. The use of a ratio provided two benefits: (1) the non-introduction of a word could be recorded and weighed into the analysis, and (2) a word introduced but introduced toward the end of the textbook was weighed accordingly.

The range of the ratios was zero to two with the values toward zero indicating an earlier SW Century 21 introduction and the values toward two indicating an earlier Gregg DJ introduction. To achieve this range, the ratios in which Gregg had an earlier introduction were subtracted from two. As both textbooks had words missing from the 1,000-word list, a zero was assigned to each word when this situation occurred. Thus, a value of one indicated either the word had the same point of introduction in each textbook or the common nonoccurrence of a word in both textbooks. Thus, if

$$SW \leq G, \text{ then } \frac{P_{sw}}{P_g}$$

$$G < SW, \text{ then } 2 - \frac{P_g}{P_{sw}}$$

where

P_{sw} = the point of word introduction for South-Western (sw)

P_g = the point of word introduction for Gregg (g)

The examples given below show how the ratios were determined for an earlier introduction by South-Western, by Gregg, and a common nonoccurrence of a word.

Rank No.	Word	P_{sw}	P_g	Ratio
1	the	615	1054	615/1054 = .5834
8	for	6034	2572	2 - 2572/6034 = 1.5738
475	premium	0	0	0/0 = 1

The ratios were squared and the sum of squares was then obtained using the procedures established earlier in the study. These values were obtained for each of the Mellinger cumulative word groupings in the 1,000 most frequently used words. The results were interpreted in standard deviations from the mean and probability of occurrence. A sample of the raw score printout is given in Appendix E. The results are summarized in Table 6.10. For comparison, a second run was made of this procedure deleting nonoccurrence words of either system (Table 6.11).

Absolute Deviations from Adjusted Mellinger Frequencies

Two problems existed in analyzing the textbook data for this procedure: (1) both systems had words from Mellinger's first 1,000 listing not present in their textbooks; and (2) the textbooks were not of the same word lengths. A procedure was devised which took these factors into account. The textbook frequencies of the 1,000 words were converted to percentages and compared against the adjusted Mellinger frequency percentages for the words. The differences between the percentage deviations of both systems were compared.

The procedures for adjusting the Mellinger frequencies to the textbook keypunching method and for the absolute percentage deviation are discussed.

Adjusted Mellinger frequency. The first step in this procedure was to adjust the Mellinger frequency to correspond to keypunching the textbooks into shorthand-countable words as presented earlier. The original 1,000 Mellinger words were held intact. Adjustments in frequencies were made to these 1,000 words and to the total Mellinger frequency, which provided for the adjustment of percentages.

The entire Mellinger listing of 12,897 words was searched for hyphenated expressions and possessives. Each occurrence thereof was checked against the 1,000-word list. If the word or words in question occurred on the 1,000-word list and the resulting shorthand outline was the same for the individual words, the Mellinger frequency for the outline was added to the frequency of the word in the 1,000-word listing.

As hyphenated expressions were converted to shorthand-countable words, the additional frequency was added to the Mellinger total frequency of 295,229 (Mellinger reported 295,271 frequency minus 42 for No. 816 club deletion). The total Mellinger frequency was adjusted for all hyphenated expressions whether in the 1,000 words or beyond to reflect the impact of the entire listing and thereby the effect of the percentage change on the 1,000 words.

For example, the hyphenated expression time-consuming as shown on the Mellinger listing occurred 14 times.[18] In converting this expression to shorthand-countable words, 14 was added to word No. 47 time in the 1,000-word listing as well as 14 added to the total Mellinger frequency of 295,271. As 14 had already been added to the original Mellinger listing for time-consuming, only one 14 figure needed to be added to the

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[18]Mellinger, p. 18.

Mellinger total for the conversion of this expression. One-word possessives added to the frequency of a word in the 1,000-word listing did not require an adjustment to the Mellinger total frequency as the word was originally included in the total.

The original alphabetic computer listing of the 1,000 words was used to record the additional frequencies. The hyphenated expression and its frequency were written beside the word. The additions to the total Mellinger frequency were recorded at the bottom of each page in the Mellinger book and then added. Adjusting possessives and hyphenated expressions of the entire Mellinger listing to shorthand-countable words involved changes in frequencies to 267 words of the 1,000-word listing.

Colored data cards were punched for those 267 words on the 1,000-word listing. Colored cards were used so that the 1,000-word listing could easily be converted to the actual Mellinger frequencies as used in the 1,000-word phase of the study or to the adjusted frequencies as used in the textbook phase of the study without mixing the cards.

Absolute percentage deviation. The absolute percentage deviation represents the absolute difference between the percentage of use of the word in the textbook compared to the percentage of use in business communications as shown by the adjusted Mellinger listing. As the adjusted Mellinger list was used as the model, either too little or too great a use of a word would not follow the model pattern. In other words, too great a use of the 1,000 most frequently used words may not have provided enough practice material on the words beyond the first 1,000 words as would be necessary to reflect their use in business communications. Too

little use of the 1,000 words would, likewise, not reflect usage in business communications.

The total-copy frequency of each of the 1,000 words in each system's textbook was computed and converted to percentages based on the shorthand-countable total-copy textbook words. The absolute difference between the textbook percentage and the adjusted Mellinger percentage was determined for each of the 1,000 words in each system. If a word did not occur in the textbook, the absolute percentage deviation became the adjusted Mellinger percentage minus zero (nonoccurrence). This figure was representative of the weight or importance of that word in the model.

The absolute deviations were squared for use in the sum of squares procedure described in the 1,000-word phase of the study. The data was summarized by cumulative word groupings, and t tests were computed in analyzing the data. The results are presented in Table 6.12, and a sample computer printout of the data for this procedure is included in Appendix E.

As 50 of the first 1,000 Mellinger words did not occur in the Gregg textbook and six did not appear in the South-Western textbook, a second run of the procedure was repeated with nonoccurrence words eliminated. If either system showed a nonoccurrence word, that word was eliminated from the calculations. This second run was made to show the effect of missing words in the textbook materials (Table 6.13).

The procedure discussed in this section addressed two problems in analyzing the textbook material. The use of absolute percentage deviations took into consideration the words from Mellinger's 1,000 words missing in the textbooks and weighed the nonoccurrence by the amount of

the adjusted Mellinger frequency for that word. Further, converting the frequencies of words in the textbooks to percentages provided a way to look at the use of those words even though the textbooks were not of the same word lengths.

CHAPTER IV

DESCRIPTION OF THE SHORTHAND SYSTEMS

The purpose of this chapter is to present a summary of the descriptive characteristics of Gregg DJ and SW Century 21 shorthand. The shorthand alphabets, memory forms, abbreviated/contracted words, and textually declared and undeclared principles are summarized. A detailed description of the two systems is presented in Appendix D.

A. SHORTHAND ALPHABETS

Both Gregg DJ and SW Century 21 are based on the use of phonetic alphabets for construction of shorthand outlines. Both systems employ basic shorthand alphabets using this phonetic approach. Only the sounds heard in a word are written; silent letters are omitted. The vowels and consonants heard in a word are combined in the order of their sounding in pronouncing the word.

Both systems use essentially the same dot, circle, hook, straight, and curved symbols to represent the basic shorthand alphabets; only the assignment of the symbols to alphabet strokes is different. Gregg DJ, however, has an x stroke which is not used in SW Century 21; and the SW Century 21 ch basic alphabet stroke resembles the Gregg DJ md, mt blend stroke.

In the basic or primary alphabets of each system, a vowel is represented by a circle or half circle, while a consonant may be a straight stroke, a curved stroke, or a dot. Only the internal y sound is represented by a small circle.

The systems used different dictionaries for the phonetic bases of their alphabets, accounting for some minor outline discrepancies that occur between systems. Gregg DJ used the Webster phonetic guidelines, while SW Century 21 used the Thorndike-Barnhart phonetic guidelines. The vowels, consonants, and digraph symbols of the basic shorthand alphabets are compared in the following paragraphs.

Vowels

Both Gregg DJ and SW Century 21 shorthand omit slightly sounded or unstressed vowels in the body of an outline. South-Western specifically defines the neutral-vowel sound to be omitted. This neutral sound is shown in Thorndike-Barnhart phonetics as a schwa. In Gregg DJ a vowel that does not add to the overall legibility of a shorthand outline may be omitted if the omission results in a more facile outline.[1]

Within the body of the outline, the basic vowel sounds of a, e, i, o, u (oo) are written with the exception of the internal short i being omitted in the SW Century 21 outlines. At the beginning and ending of outlines, the vowel sounds are written unless a shorthand principle occurs.

Two major differences occur between systems in the use of vowels. SW Century 21 uses single-direction symbols for each of the basic circle vowels. Each circle symbol is written in one direction only, the dominant longhand direction. The dominant longhand direction

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[1]B. Scott Ober, "A Word to the Whys: A Discussion of the Construction of Gregg Shorthand Outlines," Business Education World 55 (May/June 1975):15.

corresponds to the direction the letter is written in shorthand.[2] Gregg DJ circle vowels, however, may be written in either direction depending upon the flow of the outline.

In both systems most of the basic vowel sounds are represented by one outline except for the distinction made between the long i sound and the short i sound. In addition to this distinction, Gregg DJ discriminates the short u and the long u sounds, whereas South-Western maintains one symbol for both u sounds.

The shorthand outlines for SW Century 21 were constructed according to the phonetic base of the Thorndike-Barnhart third edition high school dictionary. In the fourth edition of this dictionary, some phonetic pronunciations were changed which affected outlines using the short i principle. Phonetics for many words with the -ear, -ere, -eer endings were changed from the e sound to the short i sound. As the internal short i sound is not written in South-Western, outlines written according to the third edition phonetics would appear inaccurate if checked only with the fourth edition dictionary. Word with the e and u sounds are to be verified by the third edition.[3]

Both systems use circles and half circles (or hooks) to express the basic vowel sounds. Nine vowel sounds (18 total between systems) were identified for the study and are listed in Appendix D, pages 336-337. Seven, 77.77 percent, are identical to the systems. Thus, 77.77 percent of the vowel expression in one system would carry over to the

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[2]Edward L. Christensen, "Five Crucial Features of a Shorthand System," The Balance Sheet 55 (October 1974):55.

[3]Edward L. Christensen, Century 21 Shorthand Dictionary, (Cincinnati: South-Western Publishing Co., 1976), p. vii.

vowel expression of the other system. The unique sounds, short i in South-Western and the long u in Gregg, are listed as principles in the study. Three basic vowel guidelines are followed by the two systems.

Consonants and Consonant Digraphs

Both Gregg DJ and SW Century 21 omit basic shorthand symbols for c and q. C is written according to the sound of k or s as used in a word. In South-Western q is translated to the sound of the word by combining the k and v strokes while in Gregg, q is translated to the k stroke with a dash placed underneath the w-sounding vowel. The consonant x is expressed by the k-s strokes in SW Century 21, as there is no pronounciation symbol for this letter. Gregg DJ uses a modified s written with a slight backward slant to represent x.

As with the representation of vowels, a major difference occurs between Gregg and South-Western in expressing consonants and digraphs. South-Western uses only single-direction symbols to represent consonants and digraphs. Gregg DJ has dual-direction symbols for the th, s, z, and x strokes. The function of the dual characters is to provide maximum facility in joining these strokes to other characters and to provide outline clarity when writing at high speeds.[4]

South-Western has two distinct sets of consonants represented by the same strokes: the g and j stroke and the w and v stroke. The s and z strokes are written with the same shorthand character in both systems, however, Gregg uses dual-direction symbols for the consonants. Thus, Gregg expands the use of separate symbols by employing dual-direction

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[4]Ober, p. 14.

symbols, whereas South-Western condenses the use of separate symbols for consonants and digraphs by assigning two letters to each of three sets of dual-letter symbols.

Gregg DJ and SW Century 21 use the same symbols for 14 of the 26 (28 of 52 total between systems) consonants and digraphs listed for the study. Of the remaining 12 (24 total), seven (14 total) consonants and digraphs have different shorthand symbols assigned by each system. Two letters, c and q, (four total) do not have assigned symbols in either system. The y consonant is described by shorthand principles in both systems with the w and x consonants described by shorthand principles in the Gregg system. Thus, 53.85 percent (14 of 26) of the consonants and digraphs have the same symbols, while 46.15 percent (12 of 26) require different expressions. Of those requiring different expressions, 58.33 percent (7 of 12) are strokes that have been reassigned to different characters in the two systems. Consonants and consonant digraphs are presented in Appendix D, pages 338-40.

Summary

Basically, the same shorthand symbols are used in both systems. The same shorthand characters represent 77.77 percent of the vowel symbols, and 53.85 percent of the consonant and digraph symbols represent the same shorthand characters. Therefore, 60 percent (21 of 35) of the basic vowels, consonants, and digraphs are assigned the same symbol in both systems.

Seven consonants and digraphs characters (including zh) have been reassigned different strokes in South-Western Century 21. This reassignment produces a more vertical writing pattern than occurs in Gregg

DJ shorthand. The phrase Richard's baggage demonstrates the vertical tendency of the outlines:

Gregg DJ:

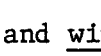
SW Century 21:

SW Century 21 differs from Gregg DJ in the use of single symbols for each primary alphabet letter. Gregg DJ uses dual outlines for s, z, th, and x characters; whereas SW Century 21 uses the same symbol for v-w, g-j, u-ū, and s-z. Gregg also uses the same symbol for s-z but has dual outlines for the symbol.

The differences in stroke assignments produce different writing and transcribing situations. The Gregg writer chooses between strokes in constructing outlines; the South-Western writer relies on content to transcribe symbols for which double letters have been assigned. For example, the Gregg writer chooses between the two s symbols when writing states , while the South-Western writer relies on content when transcribing get or jet.

Gregg DJ theory further differs from South-Western Century 21 in the construction development of words. Gregg DJ, where possible, builds upon the root word of an outline with derivatives added to the root word. SW Century 21, on the other hand, strictly follows the Thorndike-Barnhart pronunciation guideline, and each word is constructed on that basis. This permits the distinction between such words as appropriate (adjective) and appropriate (verb) in South-Western but produces different outline formations for each phonetic change, as in unless (*n les) and needless (nēd lis) .

Although Gregg DJ does differentiate between words of stronger sound

differences, such as wind (verb)  and wind (noun)  , Gregg DJ does not discriminate the sound elements as closely as does SW Century 21. Subsequently, in SW Century 21 sound is discriminated more at the encoding or outline construction phase, while in Gregg DJ the more complex discrimination occurs at the decoding or transcription phase.

B. MEMORY FORMS

Both Gregg DJ and SW Century 21 employ memory forms for commonly used words. In Gregg DJ they are designated "brief forms," and in SW Century 21, "speedforms." These memory-form outlines are designed to be written with unusual speed and ease of construction. Basically, these memory-form outlines do not follow any standard abbreviating form, yet they are not written alphabetically in full. The outline may represent only the first sound of a word, one letter of a word, or two or more sounds or letters of a word. As such, the outline does not spell out the complete word. Therefore, these outlines are normally referred to as "memory" outlines because they entail memorization rather than context or theory cues to transcribe the outline correctly.

Both systems employed similar criteria for selecting memory-form words:

1. Frequency of the words in business communications
2. Derivatives or family of related words
3. Ease of writing the outline
4. Phrasing facility and potential.[5]

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[5]A. James Lemaster, "A Look at Brief Forms," Business Education World 56 (September/October 1976):21; and Edward L. Christensen and R. Dermont Bell, Teacher's Manual, Century 21 Shorthand: Theory and Practice, book 1 (Cincinnati: South-Western Publishing Co., 1974), p. 5.

In addition to the criteria listed above, South-Western considered the "power" or influence of the speedform through 6,000 most-used words.

The 129 Gregg DJ brief form outlines represent 148 words, while the South-Western 175 speedforms represent 214 words. Of the 129 Gregg DJ brief form outlines, 111, 86.05 percent, represent one word. Of the 175 SW Century 21 speedform outlines, 139, 79.43 percent, represent one word. Seventeen, 13.18 percent, of the Gregg DJ and 33, 18.86 percent, of the SW Century 21 outlines represent two words. Ten of these combinations are common to both systems: a, an; at, it; correspond, correspondence; how, out; important, importance; in, not; one, won; satisfy, satisfactory; their, there; will, well. One Gregg outline, 0.76 percent, and three South-Western outlines, 1.71 percent, represent three words: are, our, hour (Gregg and South-Western); as, his, is and be, by, been (South-Western only). Neither system has outlines representing four or more memory forms. Appendix D contains a listing of the memory forms common to Gregg and South-Western, unique to Gregg, and unique to South-Western.

The memory forms common and unique to Gregg DJ and SW Century 21 are presented in Table 4.1. by Mellinger's[6] word-frequency clusters. Ninety-six memory-form words are common to Gregg and South-Western. Fifty-two memory-form words are unique to the Gregg system, and 118 memory-form words are unique to the South-Western system.

The ten most frequently used words of the Mellinger high-frequency word list represent 26.08 percent of the 295,271 business correspondence words analyzed. Of the ten most frequently used words, six are

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[6]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970), p. 2.

Table 4.1. Memory Forms Common and Unique to Gregg DJ and SW Century 21 Shorthand Systems by Mellinger[+] Word-Frequency Clusters

Mellinger Word-Frequency Cluster	Mellinger Word-Frequency Cluster Percent	Memory Forms Common to Both Systems		Memory Forms Unique to Gregg		Memory Forms Unique to South-Western	
		Number	Percent	Number	Percent	Number	Percent
First 10	26.08	6	6.25	2	3.85	0	0.00
First 50	48.07	27	28.12	4	7.69	6	5.08
First 100	55.61	40	41.67	12	23.08	11	9.32
First 500	73.28	71	73.96	29	55.77	53	44.92
First 1,000	81.43	80	83.33	41	78.85	74	62.71
First 5,000	96.29	92	95.83	51	98.08	109	92.37
All Words on Mellinger List*	100.00	95	98.96	52	100.00	115	97.46
TOTAL	100.00	96	100.00	52	100.00	118	100.00

[+]Morris Mellinger, Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

*Total of Mellinger separate words: 12,897

memory-form words common to both Gregg and South-Western: the, of, and, in, a, your. Gregg has eight memory-form words in this word cluster (also for and you), and South-Western has six. The South-Western outlines for you and for are considered to be written according to sound or principle. The words to and we are written with sufficient facility in both systems so as not to require abbreviated outlines.

The Mellinger first 1,000 most frequently used words represent 81.43 percent of the words used in business communications. Of the 96 total memory-form words common to Gregg and South-Western, 80, 83.33 percent, are within the first 1,000 words. Of the 52 memory-form words unique to Gregg, 41, 78.85 percent, are in the first 1,000 words. Of the 118 memory-form words unique to South-Western, 74, 62.71 percent, are within the first 1,000 words.

The first 5,000 most frequently used words represent 96.29 percent of the total running words in the Mellinger study. Within the first 5,000 words, 92, 95.83 percent, of the memory-form words common to both systems occur. Of the memory-form words unique to Gregg, 51, 98.08 percent, are within the first 5,000 words. Of the 118 memory-form words unique to South-Western, 109, 92.37 percent, are within the first 5,000 words.

Three memory-form words common to both systems occur beyond the first 5,000 most frequently used words: correspond, govern, and organize. Gregg DJ has one memory-form word unique to its system beyond the first 5,000 words: object. SW Century 21 has six words beyond the first 5,000 most frequently used words: administer, certify, construct, distinguish, educate, and specify.

Five memory-form words do not appear on the Mellinger list between the systems. One memory form common to both systems does not appear: advertise. Gregg DJ does not have a unique memory-form word excluded from the Mellinger list. SW Century 21 has three memory-form words not occurring on the Mellinger list: accord, equip, and situate.

Although these memory-form words may not appear on the Mellinger list, the derivatives of these words may be sufficient to justify the word's designation as a memory form. For example, advertise is a memory form in both systems, yet it does not appear on the Mellinger list. Several derivatives of advertise were found in the correspondence analyzed by Mellinger, however, with the following frequencies: advertising, 57; advertisement, 17; advertisements, 11; advertisers, less than four frequencies.

Of the 96 (192 total) common memory-form words in the systems, 52 (104 total), or 54.17 percent, have outlines made up of the same shorthand alphabetic characters. Of these 52, 34, or 65.38 percent, have the same shorthand outlines. Thus, by knowing the Gregg brief forms, a writer would already know 15.88 percent (34 of 214) of South-Western's speedforms. The South-Western writer would already know 22.97 percent (34 or 148) of Gregg's brief forms. By knowing the other system's shorthand alphabet, the Gregg writer would know 24.3 percent (52 of 214) of South-Western's speedforms. The South-Western writer would know 35.14 percent (52 of 148) of Gregg's brief forms.

Of the 362 total memory form words (Gregg 148 and South-Western 214), 170, 46.96 percent, are unique to a particular system. In the remaining 192 memory form words, 104 words (52 pairs), or 28.73 percent of the 362 total memory-form words are identical (same shorthand letters).

C. ABBREVIATED/CONTRACTED WORDS

The designation "abbreviated/contracted words" refers to the "abbreviated words" of the Gregg DJ system and the "contracted/correspondence forms"[7] of the SW Century 21 system. Abbreviated/contracted words are commonly longer than the memory-form words and do not have as high frequency rankings on word lists as do the memory-form words.

Both systems use general principles for shortening the abbreviated/contracted words. More of the shorthand characters are written in the abbreviated/contracted word as compared with the memory-form word, which may have only one shorthand character in the outline. Only the first part of the word is written in the Gregg abbreviated words, and the words may or may not fall into word families. In the South-Western contracted outline, the beginning and subsequent distinctive sounds of the word are written.

The Gregg abbreviating principle is presented as a guideline to abbreviating long, frequently used words. Since only the first portion of the word is used, the abbreviating principle may be applied to long words other than those presented in the Gregg text. Gregg DJ presents nine basic abbreviated outlines representing 12 words. The Gregg system introduces abbreviated word families which group abbreviated words with the following endings: -tribute, -quent, -quire, -titute, -titude, and -ology. For the purpose of this study, these abbreviated word families were grouped with joined word endings.

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[7] Irol W. Balsley, Century 21 Shorthand: Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974), p. 38.

SW Century 21 presents 21 basic contracted forms which use the first and subsequent distinctive sounds of the word. These basic contracted forms provide a writing pattern for numerous related derivative outlines. The two systems have only one abbreviated/contracted word in common, significance, and one Gregg abbreviated family word, delinquent, in common.

SW Century 21 has a cluster of correspondence forms grouped with the contracted/correspondence forms. The correspondence forms are high-frequency words related to salutations and complimentary closings. These shortened forms do not follow the abbreviating principle of the contracted forms since they involve phrasing for the salutations, complimentary closings, and short words. Two of the forms listed, Mr. and Mrs. are designated as brief forms in Gregg DJ, and the same outlines are used in both systems. Several other correspondence forms have identical outlines in both systems: Dear Sir, Dear Madam, Yours truly, Dear Mrs., Dear Mr., Dear, Respectfully yours. The complimentary closings Very truly yours and Yours very truly utilize the same shorthand letters; but as different symbols are assigned to the alphabet letter v in each system, the shorthand outlines differ.

In summary, both Gregg DJ and SW Century 21 utilize a procedure for shortening long words used less frequently than memory-form words. These general guidelines may be applied by writers of both systems to devise abbreviated/contracted outlines to fit their particular writing repetitions. Both systems have abbreviated/contracted words, and Gregg DJ groups certain clusters of these words into families. SW Century 21 includes correspondence forms in this category. Two of the words listed

are brief forms in Gregg DJ. Many of the same outlines for complimentary closings and salutations are used by both systems.

D. TEXTUALLY DECLARED AND UNDECLARED PRINCIPLES

With the primary shorthand alphabets of the systems, every word in the English language could be written in shorthand. To save time, however, principles are used to expedite the writing of shorthand outlines. As defined for this study such principles consist of:

1. Shortening a word by using a device or rule to represent a portion of that word, such as the b stroke representing the -ble ending.

2. Combining shorthand symbols to make a sound or represent a letter of the alphabet, such as the ow combination and the k-s strokes for x.

3. Using an alphabetic stroke to represent another alphabetic character beyond its original presentation, such as the oo-hook to represent w and the small circle to express internal y sound.

4. Using arbitrary symbols, such as the w dash.

5. Using rules to include or exclude alphabetic shorthand strokes, such as the omission of the internal short i sound.

The remainder of this chapter is a brief summary of the textually declared and undeclared principles of the two systems by major groupings. A detailed explanation of each principle is presented in the description of systems in Appendix D.

The following textually declared and undeclared principle groupings are summarized: vowels, consonants, blends and bends, word beginnings--disjoined, word beginnings--joined, word endings--disjoined, word

endings--joined, miscellaneous shorthand principles, writing and joining principles, auxiliary rules, and writing accuracy and precision guidelines. The textually undeclared principles related to each major grouping are discussed within the groupings.

Each grouping is broken down into identical, similar, and unique principles of each system using the following classifications:

--identical: refers to the same part of the word and expresses it in the same way (same shorthand letters)

--similar: refers to the same or alike part of a word but differs in expressing that part

--unique: does not refer to the identical or similar part of a word.

When the principles of one system were incorporated in the principles of the other system even though additional combinations were covered by the stroke, the principles were considered similar. For example, the Gregg and South-Western nd, nt combinations are represented by the same outlines; but in addition to these combinations, the nv bend is added to South-Western. These principles were considered similar as the Gregg blends were included in the South-Western bends and blends.

Percentages were determined for the identical, similar, and unique occurrences between the systems. Two approaches were used in calculating the percentages.

First, each system's percentages was computed on the basis of the system's application to the other even though the principles may not have been grouped the same by both systems. In computing the percentages for the bends and blends grouping, for example, ngk is considered a

consonant combination in Gregg DJ and a blend (nk) in South-Western. However, to ascertain the impact of the entire Gregg system upon the bends and blends of the South-Western system, the Gregg ngk was included in the percentage computations. The resulting percentages provide an indication of the application of Gregg theory to the South-Western bends and blends . In other words, how much of the Gregg theory, as it relates to the South-Western bends and blends, is identical, similar, or unique to South-Western?

Percentages were then determined for the South-Western system's impact upon the Gregg grouping. Then, to obtain the total overlap between systems as related to a particular grouping, percentages were determined on the total number of related principles for each system as presented in Appendix D.

A second approach was utilized for the summary tables at the end of the chapter. The purpose of these summary tables is to present the system-wide application of principles by their identical, similar, or unique relationship with the other system. Principles were summarized with their original system's grouping to avoid doubling percentages. For example, the Gregg ngk consonant principle was calculated with the consonants rather than the bends and blends grouping; however, the ngk principle was listed as similar because of its relationship to the South-Western ng blend.

Two tables are presented: the application of the total Gregg system to South-Western theory, and the application of the total South-Western system to Gregg theory. The textually declared and the textually undeclared principles were considered in the two tables.

Vowel Principles

As defined in this study, the shorthand principles relating to vowels include the combining of shorthand alphabetic characters to make a sound, shortening a word by a device to represent a portion of that word, and using rules to include or exclude alphabetic strokes. Gregg (G) and South-Western (SW) use these approaches to developing vowel principles. Eight textually declared vowel principles are listed for Gregg and nine for South-Western in Appendix D, pages 341-42.

Identical. Both systems have one identical principle: oi(oy)--G with oi,oy--SW.

Similar. Two similar vowel principles occur between systems: (1) ow(ou)--G with ou,ow--SW; and (2) long i following a vowel--G with long i followed by a basic vowel--SW.

Unique. Gregg lists five unique principles to cover vowel occurrences: (1) ia, ea; (2) minor vowel omission, (3) omission of vowel preceding -tion; (4) dipthong u; and (5) short u omitted.

South-Western lists six unique vowel principles: (1) long i in homophones; (2) short i in body of word; (3) initial short i; (4) initial short i, (one-syllable words); (5) root word beginning vowel; and (6) adjacent e's.

Of the eight textually listed Gregg vowel principles identified for the study, one, 12.5 percent, is identical to South-Western; two, 25 percent, are similar; and five, 62.5 percent are unique to the Gregg system. Of the nine textually listed vowel principles identified for South-Western, one, 11.11 percent, is identical to Gregg; two, 22.22

percent, are similar to Gregg; and six, 66.67 percent, are unique to South-Western. Of the total 17 principles presented in both systems, two, 11.76 percent, are identical to both systems; four, 23.53 percent, are similar; and 11, 64.71 percent, are unique to their individual systems.

In addition to the textually stated principles, 18 textually undeclared vowel principles were determined for the Gregg system and are presented in Appendix D, pages 366-68. Combining the textually declared and undeclared principles, one, 3.85 percent, of the 26 Gregg vowel principles is identical to South-Western; two, 7.69 percent, are similar; and 23, 88.46 percent, are unique to Gregg.

One textually undeclared principle was observed for South-Western. With the inclusion of this additional principle, one, 10 percent, of the South-Western principles are identical to Gregg; three, 30 percent, are similar; and seven, 70 percent, are unique to the South-Western system. Overall, of the 36 total vowel principles identified for the study--textually declared and textually undeclared--two, 5.56 percent, are common to the systems; four, 11.11 percent, are similar; and 30, 83.33 percent, are unique to the individual systems.

Beyond the alphabetic symbols representing the basic vowels, little commonality exists between the systems in expressing vowels. With 64.71 percent of the textually declared vowel principles and 83.33 percent of the textually declared and undeclared principles unique to the systems, knowledge of vowel principles in one system would provide little carry-over to the other system.

Consonant Principles

Both systems utilize shorthand consonant principles. Most of the consonant components, however, are included in the basic consonant alphabet with comparatively few principles added beyond the basic alphabet. Four textually declared consonant principles are listed for Gregg and one for South-Western in Appendix D, page 342. Western nk related principle is included as similar to the Gregg ngk consonant.

Identical. No identical principles occur.

Similar. One similar principle occurs: ngk--G with nk(ngk)--SW blend. Gregg and South-Western differ in their group assignments of this principle. Gregg lists it among the consonants, and South-Western considers it a blend. The principles result in the same outline components, however, in most instances.

Unique. Three unique consonant principles occur in Gregg: (1) x; (2) w (word beginnings); and (3) w (body of words).

One unique consonant principle appears in South-Western: internal y sound.

Of the four textually declared Gregg consonant principles listed, none are identical to South-Western; one, 25 percent, is similar; and three, 75 percent, are unique to Gregg. Of the two principles presented in South-Western, one, 50 percent, is similar to Gregg; and one, 50 percent is unique. Of the six textually presented principles related to consonant principles, only two, 33.33 percent, are similar; while four, 66.67 percent, are unique.

In computing the total percentages, the South-Western nk bend was included in this consonant grouping but is excluded in the summary table to avoid duplicating principle percentages across the entire system. Including the nk blend at this point, however, reflects the consonant related similarities and differences of the two systems.

No textually undeclared consonant principles were observed for Gregg. Two additional consonant principles were observed in South-Western according to the definitions of the study. Of the eight total declared and undeclared principles (including the South-Western nk blend), no principles are common to the systems. Two, 25 percent, are similar; and six, 75 percent, are unique to the separate systems.

In comparing the vowel and consonant principles of the two systems, both systems use principles beyond the basic alphabetic symbols to complete the alphabetic structure. The majority of the vowel and consonant principles, however, are unique to the separate systems.

Bends and Blends

This grouping includes the blends of Gregg DJ and the bends and blends of SW Century 21. In SW Century 21 bends represent a curving of two primary strokes, and the blends represent a merging of two straight primary strokes. Gregg DJ makes no distinction between the curves or straight combinations; both are included in the Gregg blends. Eleven textually declared blends are listed for Gregg and nine for South-Western in Appendix D, pages 343-44. In addition, the Gregg nkg consonant combination is included in this group for comparison with the South-Western nk blend.

Identical. Three identical bends and blends occur: (1) ded, dit, det, ted--G with dd, dt, td--SW; (2) men, mem--G with mm, mn--SW; and (3) ld--G with ld--SW.

Although Gregg principles are stated as ded, dit, det, ted and men, men, vowels other than e and i are expressed by these blends. In South-Western the principles are stated as dd, dt, td and mm, mn, eliminating reference to the intervening vowel.

Similar. Four similar bends and blends and related principles occur: (1) dem, tem--G with dm, dn--SW; (2) den, ten--G with tm, tn--SW; (3) nd, nt--G with nd, nt, nv--SW; and (4) ngk--G consonant with nk--SW.

The Gregg dem, tem combinations are based on the long m stroke, whereas the South-Western dm, dn bends are based on the long d stroke. The Gregg den, ten blends are based on the short n stroke with the South-Western tm, tn bends based on the short t stroke. Thus in these combinations, the Gregg blends are pivoted upon the n, m basic alphabet strokes, whereas the South-Western outlines are pivoted on the t, d strokes. This affords similar curved strokes in both systems, but the length is determined by different straight strokes of the primary alphabets.

Unique. Gregg DJ has five principles unique to its system: (1) def, dif; (2) div, dev; (3) md, mt; (4) rd; and (5) ses.

Although both systems use the ld principle, only Gregg uses the rd principle as it is copyrighted for the system. South-Western writes the sequence as r-d. The South-Western -ed word ending, however, reduces the use of the r-d alphabetic sequence.

The Gregg ses blend represents a joining of the two s forms. South-Western handles this sound by joining two s strokes together since the short i sound is eliminated in the body of a word.

Of the 12 textually declared principles represented in Gregg (including the ngk related consonant), three, 25 percent, are identical to South-Western; four, 33.33 percent, are similar; and five, 41.67 percent, are unique to Gregg. In other words, 25 percent of the Gregg system theory relating to the bends and blends of South-Western could be transferred to writing the South-Western bends and blends; 33.33 percent is similar to South-Western's bends and blends; and 41.67 percent would not apply to the South-Western bends and blends.

Of the nine principles listed for South-Western, three, 33.33 percent, are identical to Gregg; four, 44.44 percent, are similar; and two, 22.22 percent, are unique. Subsequently, 33.33 percent of the South-Western writer's knowledge of bends and blends would transfer to writing Gregg DJ principles; 44.44 percent would be similar to Gregg DJ principles; and 22.22 percent of the SW Century 21 writer's knowledge of bends and blends would not apply to Gregg's principles.

Of the 21 total bends, blends, and associated principles from both systems, six, 28.57 percent, are common to the systems; eight, 38.10 percent, are similar; and seven, 33.33 percent, are unique to the separate systems.

As presented in Appendix D, page 365, four textually undeclared principles were determined in Gregg DJ and one in SW Century 21. Of the five total, none is common to each system; two are similar; and three are unique to Gregg. Combining the textually declared and undeclared principles in both systems, six, 23.08 percent, of the total

26 principles are common to the systems; ten, 38.46 percent, are similar; and ten, 38.46 percent, are unique to the particular system.

Word Beginnings--Disjoined

Both systems employ disjoined word beginning principles. In addition to disjoined word beginnings, South-Western has word compounds and proper name elements that were brought into the general category of disjoined word beginnings. Ten disjoined word beginnings occur in Gregg DJ and eight in SW Century 21 shorthand with one Gregg related miscellaneous city principle as presented in Appendix D, pages 344-45.

Identical. Three identical disjoined word beginnings occur: (1) electr-, electric-; (2) over-; and (3) under-.

In South-Western electr- is considered a word beginning, whereas electric- is considered a word compound. Likewise, both over- and under- are word compounds in South-Western. In Gregg DJ, over and under are presented as brief forms in addition to their use as word beginnings. South-Western does not list separate speedforms for over and under, although when used alone these outlines are the same as the Gregg brief form outlines.

Similar. Five similar disjoined word beginnings are listed: (1) self-; (2) super---G with super-, supr---SW; (3) trans---G with tran-, trans---SW; (4) inter-, intr-, enter-, entr---G with inter-, intr---SW; and (5) Saint-.

Saint- in Gregg DJ is classified as a large cities abbreviation.

Unique. Gregg shorthand has three unique disjoined word beginnings: (1) ah-, aw-; (2) circum-; and (3) post-.

In SW Century 21 these word beginnings are written using the primary alphabet sounds. South-Western does not have any unique disjoined word beginnings.

In summary, three of the 11 related Gregg disjoined word beginnings (including cities abbreviation Saint-), or 27.27 percent, are identical to South-Western; five, 45.45 percent, are similar to South-Western's disjoined word beginnings; and three, 27.27 percent, are unique to Gregg's system. Three of the eight listed South-Western disjoined word beginnings, or 37.5 percent, are identical to Gregg; five, 62.5 percent, are similar, with none being unique to South-Western.

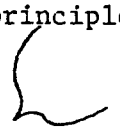
Of the 19 total (including cities abbreviation Saint-) principles associated with disjoined word beginnings occurring in the two systems, six, 31.58 percent, are identical to both systems; ten, 52.63 percent, are similar to both systems; and three, 15.79 percent, are unique to Gregg. No textually undeclared disjoined word beginnings were determined for either system.

Word Beginnings--Joined

Both Gregg DJ and SW Century 21 employ joined word beginnings in their systems. Nineteen joined word beginnings occur in Gregg and 20 in South-Western. As presented in Appendix D, pages 346-48, three related Gregg principles are included in addition to the 19 joined word beginnings since they are similar to the South-Western principles.

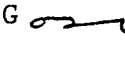
Identical. Ten joined word beginnings are identical: (1) al-; (2) be-; (3) ex-; (4) per-, pur-; (5) sub-; (6) pre-; (7) pro-; (8) ya-; (9) ye-; and (10) yo-.

The pre- and pro- joined word beginnings of South-Western are represented by primary strokes p-r-e and p-r-o, respectively. Although Gregg does not state pre- and pro- word beginnings, they are written the same as the South-Western principles.

The be- principles in Gregg also represents the bi combinations, as in bifocal  . The South-Western system does not extend the word beginning to this concept as the elimination of the short i vowel would occur; otherwise, if the long i sound occurs, the alphabetic characters are used. This same rationale applies to the South-Western de- beginning.

The Gregg per-, pur- applied only with a neutral-sounding vowel and when the r is pronounced with the syllable. Consequently, period is written  and puritan is written  . South-Western phonetic guidelines do not indicate use of the word beginning if the vowel is long, as in puritan .

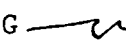
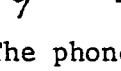
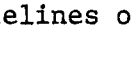
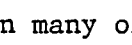
Similar. Eight joined word beginnings are similar: (1) con-, com-; (2) de-, di---G with de---SW; (3) em-, im---G with im---SW; (4-5) en-, in-, un---G with in- and un---SW; (6) re-; (7) yu- sound; and (8) New-.

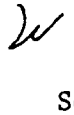
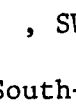
Gregg uses the shorthand principle for em-, im- and en-, in-, un- except when the beginning is followed by a vowel, in which case it is written out. For the im- and in- principles of South-Western, the initial short vowel sound is written when it is not part of a word beginning, as in innumerable G  ; SW  .

New- is considered a proper name element in South-Western. The Gregg system does not delineate the concept of n for New-, but it is

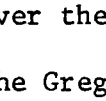
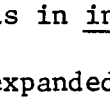
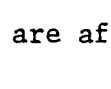
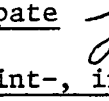
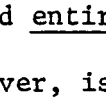
applied in most situations. New- is presented with the large cities abbreviations in the Gregg system.

Unique. Gregg has four joined word beginnings unique to its system: (1) des-, dis-; (2) for-, fore-, fur-; (3) mis-; and (4) ul-.

Although South-Western does not have a dis- principle, the elimination of the short i sound in South-Western results in many outlines using the same strokes for this portion of the word, as in disburse, G  , SW  . Likewise, with the mis- word beginning, the elimination of the short i sound in the body of a word in South-Western results in outlines similar to Gregg outlines, as in mistake G  , SW  ; mystery, G  , SW  .

The phonetic guidelines of the South-Western fr bend allow the principle to be used in many of the same words as the Gregg for-, fore-, fur- word beginnings, as in forfeit, G  , SW  ; forethought, G  , SW  ; and furnace, G  , SW  .

South-Western has two unique joined word beginnings: (1) initial yi-, and (2) ind-, int-, inv-.

The ind-, int-, inv- principle omits the initial vowel using only the nd, nt, nv bend in most situations. However, with the tm, tn bend the principle is not used since the tm, tn bend normally takes precedence over the nd, nt bend, as in intemperance  ; intend  . In the Gregg system, an expanded blends statement provides direction in this situation. Blends are used in derivatives if only the first or last letters of a root word are affected. For example: intake  ; anticipate  ; and entire  . The South-Western principle ind-, int-, inv-, however, is confined to the i stroke.

Summarizing, ten, 45.45 percent, of the 22 Gregg joined word beginnings, related principles, and observations are identical to South-Western; eight, 36.36 percent, are similar; and four, 18.18 percent, are unique. Of the 20 South-Western joined word beginnings, ten, 50 percent are identical to Gregg; eight, 40 percent, are similar; and two, 10 percent, are unique. Of the 42 total principles, related principles, and related observations for both systems, 20, 47.62 percent, are identical to both systems; 16, 38.10 percent, are similar; and six, 14.28 percent, are unique to each system.

As summarized in Appendix D, pages 368-69 , five textually undeclared joined word beginning principles were observed (Gregg, two; South-Western, three). With the addition of these undeclared occurrences, 20 of 47 total principles, related principles, and related observations, 42.55 percent, are identical to both systems; 16, 30.04 percent, are similar; and 11, 23.40 percent, are unique to the systems.

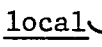
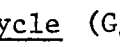
Both systems apply joined and disjoined word beginnings. The disjoined word beginnings are fewer in both systems. More of the textually stated disjoined word beginnings, 45.45 percent, are similar to the systems than they are identical or unique. The greater portion of the textually stated joined word beginnings, 47.62 percent, are identical with only 14.28 percent of the textually stated joined word beginnings unique to a system.

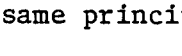
Word Endings--Disjoined

As indicated in Appendix D, pages 349-51, both systems utilize disjoined word endings with identical, similar, and unique word endings in each system. SW Century 21 uses 22 disjoined word endings; Gregg DJ

uses ten. In addition, three Gregg joined word endings are included as similar to South-Western disjoined word endings, and one South-Western joined word ending is included as similar to a Gregg disjoined word ending.

Identical. Gregg and South-Western have six identical disjoined word endings: (1) -cal, -cle--G with -acle, -ical, -icle--SW; (2) -hood; (3) -ing; (4) -ship; (5) -ulate, -ulation--G with -ulate--SW; and (6) -ward.

In Gregg, two-syllable words having -cal, -cle endings are joined and written out, as in local  . South-Western lists the preceding schwa-sounding vowel (i and a) with the word endings -acle, -ical, -icle. Application of this principle in South-Western is limited to the phonetics of these occurrences. With this limitation, South-Western does not state an exception to the basic principle as does Gregg for two-syllable words; however, the outlines in these situations become similar. For example, in the outline cycle (G  ; SW), Gregg follows the two-syllable exception; and South-Western does not use the -icle principle as the preceding vowel is not a schwa-sounding a or i vowel.

Although South-Western does not state a -ulation principle as does Gregg, the -tion principle is combined with the -ulate principle to form -ulation as it is in Gregg. This combination causes the outlines to be constructed of the same principles, as in regulation, G  , SW  .

Similar. Differences between systems may arise when one ending is joined in one system and disjoined in another. If a word ending is

disjoined in one system yet has a similar word ending joined in the other system, it is listed with the similar disjoined word endings. This provides a comparison of the total system's impact on the disjoined word endings of the other system. Six similar endings occur: (1) -gram (with SW joined); (2) -ingly; (3) -ings; (4) -ology--G joined with -alogy, -ology--SW; (5) -titude, -titute--G joined with -titude, -titute, -tude--SW; and (6) -ual--G joined with -tual--SW.

Gregg lists the -ology principle as an abbreviated word family using a joined o-l combination (technology): South-Western uses a disjoined o stroke (technology). South-Western states the principle to include -alogy (analogy). The Gregg -ology concept is extended to -alogy (analogy); thus, the -logy portion becomes the constant portion of the Gregg principle.

Unique. Both systems have disjoined word endings unique to their systems. Five are listed for Gregg DJ: (1) -ification; (2) -ingham; (3) -ington; (4) -lity, -lty; and (5) -rity.

Eleven disjoined word endings are listed for SW Century 21: (1) -bility; (2) -casion, -cation; (3) -cher, -ture; (4) -ed; (5) -er, -or with speedform related words and contracted forms; (6) -ety, -ity; (7) -ive, -sive, -tive; (8) -ous, -us; (9) -sation, -zation; (10) -scribe; and (11) -script.

In comparison to the South-Western -bility disjoined word ending, Gregg combines the -ble joined word ending and the -lity disjoined word ending to form this combination, as in possibility, G ; SW .

The South-Western -ed word ending takes precedence over other principles or sounds, such as t, d, and dd, dt, td. Gregg uses the sounds that are heard in the word, the t, d, and blends, to accomplish the past tense. The use of the -ed word ending results in different outlines for homonyms, such as past  and passed in South-Western shorthand. As the sound that is heard is written in Gregg, the outlines remain the same, past  and passed .

In summary, six, 35.29 percent, of the 17 Gregg disjoined word endings and related word endings are identical to South-Western; six (including joined endings -ology, -titude, -titute, and -ual), 35.29 percent, are similar; and five, 29.41 percent, are unique. Of the 23 South-Western disjoined word endings and related disjoined word endings, six, 26.09 percent, are identical to Gregg; six (including disjoined -gram), 26.09 percent, are similar; and 11, 47.82 percent, are unique. Of the 40 total disjoined and related joined word endings of the other system, 12, 30 percent, are identical to the two systems; 12, 30 percent, are similar; and 16, 40 percent, are unique.

Two observations were added to the textually undeclared disjoined word endings. With this addition, of the 42 total principles in both systems related to disjoined word endings, 12, 28.57 percent, are identical; 12, 28.57 percent, are similar; and 18, 42.86 percent are unique. A summary is presented in Appendix D, page 369.

Word Endings--Joined

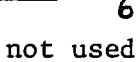
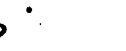
Both systems have joined word endings which include word endings, geographical terminations for Gregg, and proper name elements and word compounds for South-Western as indicated in Appendix D, pages 351-54.

In Gregg DJ, 24 joined word endings are listed, and 15 are listed in SW Century 21. Three similar related disjoined word endings occur in both systems.

Identical. Four identical joined word endings occur between systems: (1) -ble; (2) -burg(h)--G with burg(h), -berg--SW; (3) -ful; and (4) -ville.

The short vowel sounds preceding word endings, as in the -ble, -cal, -cle endings, are considered part of the word ending in Gregg. The schwa-sounding vowel and the short i sounds are not written in the body of the word in South-Western. South-Western delineates vowels preceding word endings when the endings are limited to avoid application of the principles beyond their intended scope, as in -acle, -ical, -icle. thereby avoiding words such as vocal.

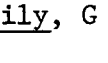
Similar. Ten similar joined word endings occur: (1) -gram--G disjoined; (2) -ology--G with -alogy, -ology--SW disjoined; (3) -ly; (4) -ment; (5) -self; (6) -selves; (7) -ther--G with -ther, -thor--SW; (8) -tion--G with -sion, -tion--SW; (9) -titude, -titute--G with titude-, -titute, -tude--SW disjoined; and (10) -ual--G with -tual--SW disjoined.

With the -ly principle, Gregg uses the e circle as in simply  , while South-Western loops the e circle. The -ly principle is not used in South-Western if the l sound is heard at the end of the root word, as in simply  .

Gregg utilizes only the -ther principle, whereas South-Western uses both -ther, -thor represented by the th stroke. Words with -thor are written out in Gregg, as in author  .

The -tion, -sion principle represents sounds of sh-n, zh-n in both systems. These sounds produce a variety of spellings beyond the most common -tion, -sion spellings. The South-Western ending is a natural combination of the sh-n strokes; Gregg uses only the sh stroke to represent the word ending.

Unique. Gregg utilizes more unique joined word endings than South-Western; conversely, South-Western has more disjoined word endings than Gregg. Eleven unique joined word endings occur in Gregg DJ: (1) -cient, -ciency; (2) -ern, -erm; (3) -ily; (4) -ort; (5) -quent; (6) -quire, (7) -sume, -sumption; (8) -tain; (9) -tial, -cial; (10) -tribute; and (11) -ure.

With the -ily ending Gregg loops the e as does South-Western with the -ly ending. Consequently, outlines in both systems may be made up of the same strokes even though the outlines result from use of different principles, as in family, G  (-ily); SW (-ly).

The endings -ology, -titude, -titute, -quent, -quire, and -tribute are classified in the Gregg system as abbreviated word families. Three additional abbreviated word families, -iety, -itis, -ntic, are listed in the textually undeclared joined word endings. Although these word families are not included in the Gregg textbooks as word families, the abbreviated outlines are given in the shorthand dictionary.

Four joined word endings are unique to South-Western: (1) -field, (2) -graph, (3) -ject, and (4) -port. The -port ending is used with consistency as a word ending in a proper name element. However, if the combination is used elsewhere in a proper word, the combination is written out, as in Porterfield  . Portland  is

classified as an abbreviated form, so the -port element would not apply. The -port proper name element does not apply to other words, such as deport.

Of the 25 Gregg joined word endings and disjoined word endings related to the joined word endings of South-Western, four, 16 percent, are identical; ten (including -gram), 40 percent, are similar; and 11, 44 percent, are unique. Of the 18 South-Western joined word endings and disjoined word endings related to the joined word endings of Gregg, four, 22.22 percent are identical; ten (including -alogy, -ology; -titude, -titute, -tude; and -tual), 55.56 percent, are similar; and four, 22.22 percent, are unique. Of the 43 total, eight, 18.60 percent, are identical; 20, 46.51 percent, are similar; and 15, 34.88 percent, are unique.

Four textually undeclared joined word endings were determined for Gregg DJ, including three abbreviated word families: -iety, -itis, -ntic. These abbreviated word families are not textually listed as principles, although their use can be documented in the shorthand dictionaries of the system. With the addition of the undeclared principles, 47 principles were identified. Of the 47 principles, eight, 17.02 percent are identical; 20, 42.55 percent, are similar; and 19, 40.43 percent, are unique. These undeclared principles are stated in Appendix D, page 369.

Miscellaneous Shorthand Principles

Miscellaneous shorthand principles have a shorthand character written for at least a portion of the word. These principles do not fit into any of the previous categories. No identical miscellaneous

principles were identified in the systems; however, 11 similar principles were identified. One unique principles was identified for Gregg DJ.

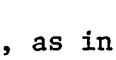
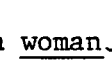
Identical. No identical miscellaneous shorthand principles occur.

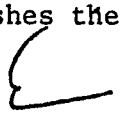
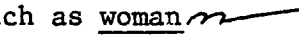
Similar. Eleven similar principles occur in both systems: (1) business abbreviations--G with correspondence forms--SW; (2) cities abbreviated; (3) compound words; (4) countries; (5) days; (6) months; (7) states; (8) quantities and amounts--G with quantities--SW; (9) miscellaneous terms--SW; (10) ordinal numbers; and (11) compound man-men.

Both Gregg and South-Western combine outlines of separate words to form compound words. South-Western combines words without alteration, whereas Gregg will alter an outline to achieve a better joining, as in with  and stand  combined to form withstand  .

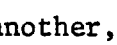
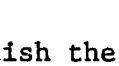
States are abbreviated in both systems. States are written in shorthand in the Gregg system, although they may be written in two-letter postal code abbreviations. In South-Western states are written in longhand using the two-letter postal code abbreviations. Shorthand outlines for the states are given in the South-Western dictionary.

The first four ordinal numbers are written out in shorthand outlines in Gregg DJ; thereafter, the ordinal ending is usually written above the figure. In South-Western, however, all ordinal numbers use the ordinal endings.

In SW Century 21 man is written out in a compound to distinguish it from men, which is written with the mn blend. If, however, the man combination occurs in other words, depending upon the phonetics it may be written with the mn blend, as in woman  and women  .

Gregg DJ also distinguishes the man-men compound, as in businessman  and businessmen  . Such distinction is not made in other words, such as woman  and women .

Unique. One unique principle occurs between the two systems: Gregg intersection.

Gregg DJ uses an intersection which allows the writing of one shorthand character through another, as in a.m.  . South-Western does not employ this technique although with one outline, Ms.  , the s is crossed to distinguish the outline from Miss .

Of the 12 principles identified or observed that relate to the miscellaneous shorthand principles of South-Western, 11, 91.67 percent are similar; one, 8.33 percent, is unique. Of the 11 principles identified and observed in South-Western, 11, 100 percent, are similar to the writing of miscellaneous shorthand principles in Gregg. Of the 23 total principles identified or observed, 22, 95.65 percent, are similar, and one, 4.35 percent, is unique. No textually undeclared principles were identified. Appendix D, pages 355-56, summarizes the principles.

Writing and Joining Principles

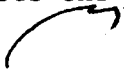
To achieve dictionary-correct outlines, principles are used in both systems that provide direction for combining shorthand characters. Decisions are required of a shorthand writer as to the direction, position, selection, or inclusion of a shorthand character in the joining of one character to another. Joining principles require decisions by the writer that could be diagnosed as correct or incorrect by comparing the written outline with the dictionary outline. Joining principles differ from penmanship guidelines, as penmanship guidelines

involve the quality of writing and would require a judgment decision to determine the accuracy of the outline.

Twenty-one textually declared joinings are listed for Gregg DJ, including five rules for joining s and two joining observations similar to South-Western's joining patterns. Nineteen joining principles are listed for South-Western. Between the systems, 25 undeclared joinings occur. Appendix D, pages 357-59 and 369-72 contain the joinings.

Identical. One identical joining principle occurs: Gregg numbers with South-Western quantities. Both systems use the same rules for placement of numbers and quantities representing the hundred, thousand, and million figures.

Similar. Five similar joining principles occur: (1) jog; (2) oo after n, m--G with u after horizontal stroke--SW; (3) word placement; (4) circle i--G observation; and (5) s distinguished--G observation.

The jog is used in both systems to connect two straight lines. Because of the assignment of the basic shorthand alphabet strokes and the elimination of the short i sound in the body of the word, South-Western also uses the jog to connect straight lines to upward curves, as in diminish  . When this situation occurs in Gregg shorthand, the vowel is generally included to keep a distinct outline, as in diminish  .

Unique. Fifteen unique joining principles occur in Gregg (including five rules for joining s: (1) circles with angles and curves; (2) circles with clockwise and straight strokes; (3) circles in opposite directions; (4) for-, fore- followed by a vowel; (5) fore- word beginning joined;

(6) o before n, m; (7) oo-s; (8) modified compound words; (9-11) comma s (three rules); (12-13) left s (two rules); (14) under th; and (15) past tense.

Thirteen unique joining principles occur in South-Western: (1) circle vowels written and joined; (2) beginning vowel on straight stroke; (3) speedform in compound; (4) letters vs. lease; (5) tm, tn over nt; (6) inter-, int-, in-; (7) word beginnings added; (8) word endings added; (9) -ed, -ous, -us one-syllable words; (10) -ly with l sound; (11) -ject derivatives; (12) combined disjoined word endings; (13) two-part outlines and words.

In summary, of the 21 total Gregg joining principles and observations related to the South-Western joining principles, one, 4.76 percent, is identical, five (including two observations), 23.81 percent, are similar; and 15, 71.43 percent, are unique. Of the 19 South-Western joining principles related to the Gregg joining principles, one, 5.26 percent, is identical; five, 26.32 percent, are similar; and 13, 68.42 percent, are unique. Of the 40 textually listed joining principles in both systems, two, 5 percent, are identical; ten (including two Gregg observations similar to South-Western's principles), 25 percent, are similar; and 28, 70 percent, are unique.

Three textually declared rules are presented to explain the writing direction of circle vowels in Gregg; South-Western presents two. Although all circle vowels are to touch and cross in the same dominant pattern in South-Western, outlines other than dictionary-correct outlines could be constructed with only these guidelines. Four additional explanations were added to the textually undeclared joining principles of

South-Western to clarify the construction of shorthand outlines using circle vowels.

Gregg utilizes two shorthand symbols for the s stroke and lists five rules for selecting the proper s symbol. With only these textually stated rules, however, a student could construct an incorrect outline. Eight additional statements were added to the textually undeclared principles for joinings not specifically covered by the textually declared principles.

Monosyllables in Gregg are generally written in full and do not employ the principles used in longer words, as in cult but adult . In South-Western the -ed, -ous, -us endings are not utilized in one-syllable words. This concept is generally applied to most one-syllable word endings in the disjoined word ending combinations, such as -ity, in city but electricity ; and -ive, as in give , but passive .

Seventeen textually undeclared principles were added for Gregg and eight for South-Western. With the addition of these explanations, eight, 12.31 percent, of the 65 total textually declared and undeclared principles are identical; 13, 20 percent, are similar; and 44, 67.69 percent, are unique.

Auxiliary Rules

Rules are applied in both systems to cover repetitive occurrences of nonshorthand elements. As these nonshorthand elements are a function of the copy, most are handled identically or in a similar fashion between the systems. Eight textually declared auxiliary rules and observations

occur in Gregg DJ; ten in South-Western. Three textually undeclared rules occur. Appendix D, pages 359-60 and 372 summarize the rules.

Identical. Three identical auxiliary rules are common to the two systems: (1) initials with surnames; (2) exact amounts of money; and (3) possessive form.

Similar. Five similar auxiliary rules occur (including two Gregg observations similar to South-Western rules): (1) capitalization; (2) contractions (G observation); (3) numbers (G observation); and (4-5) terminal and internal punctuation.

Unique. South-Western applies two unique concepts in writing the months and subsequent days as dates and underlining to be underscored in shorthand transcription.

Of the eight Gregg auxiliary rules and observations related to the South-Western auxiliary rules, three, 37.5 percent, are identical to South-Western (including two observations); and five, 62.5 percent, are similar. Of the ten South-Western auxiliary rules, three, 30 percent, are identical to Gregg; five, 50 percent, are similar; and two, 20 percent, are unique. Of the 18 total between systems, six, 33.33 percent, are identical; ten, 55.55 percent, are similar; and two, 11.11 percent, are unique.

Three textually undeclared auxiliary rules were identified. With the addition of these undeclared rules, six, 28.57 percent, of the 21 total textually declared and undeclared auxiliary rules are identical; 12, 57.14 percent, are similar; three, 14.29 percent, are unique.

Writing Accuracy and Precision

Penmanship guidelines direct the manner of writing a shorthand character. Both systems given instruction on how symbols are to be written, including the slant, height, length, depth, and proportion of shorthand characters. Penmanship guidelines formulate a model for the shorthand writer to emulate in achieving accurate and legible shorthand characters. These guidelines refer to the quality of outline construction and as such, would require a judgment decision on the accuracy of the outline.

If a textually declared guideline of one system could be applied to the other system in which no textual reference was asserted, an observation was made that the guideline could also be applied to the other system. Several unique guidelines occur as the result of different basic alphabetic stroke assignments. Thirty-two penmanship guidelines (including several multi-statements) were determined for Gregg DJ and 24 for SW Century 21 and are presented in Appendix D, pages 361-64.

Identical. Eleven penmanship guidelines are identical: (1) d, t, det proportion--G with d, t, dt proportion--SW; (2) h dot placement; (3) n, m, men proportion--G with n, m, mn proportion--SW; (4) ng, nk length (G observation); (5) p, b sweep (SW observation); (6) disjoined word beginning placement (SW observation); (7-8) circle i writing (SW observation); (9-10) o-hook and oo-hook writing--G with o, u writing--SW (one observation); and (11) s, p, b shape and proportion.

Similar. Eight similar penmanship guidelines occur: (1) ow, oi writing--G with oi writing--SW observation; (2) rd, ld writing--G with

ld writing--SW observation; (3) jog (G observation); (4) joining of hooks and circle vowels--G with eo, ea--SW; (5) ya, ye looping--G observation with ya, ye, yi looping--SW. Three additional guidelines on the writing of the r, l curves are similar to Gregg and South-Western. They were classified as unique to Gregg in Appendix D to keep the concepts relating to r, l, k, g together in the description.

Unique. Thirteen unique guidelines occur in Gregg DJ: (1) writing circles a and e; (2) th, ten, tem proportion; (3) def blend size; (4) f, v fluency; (5-10) writing of k, g, (also r, l) curves; (11) s, f, v proportion; (12) sh, ch, j proportion and direction; and (13) w dash insertion.

Five unique guidelines occur in South-Western: (1) writing of circle vowels; (2) tm, tn; dm, dn proportion; (3) circles joined to b, p, s; (4) ot, st joinings; and (5) sh, zh; fr; gr, jr proportion.

Of the 32 total Gregg penmanship guidelines, including observations, 11, 34.38 percent, are identical to South-Western writing and accuracy guidelines. Thus, a Gregg writer would be able to apply 34.38 percent of the writing patterns in Gregg DJ to the writing patterns of South-Western. Eight, 25 percent, of the Gregg penmanship guidelines are similar to South-Western (including the three r, l guidelines); and 13, 40.62 percent, are unique.

Of the 24 total South-Western penmanship guidelines, including observations, 11, 45.83 percent, are identical to Gregg guidelines; eight, 33.33 percent, are similar (including the three r, l guidelines); and five, 20.83 percent, are unique.

Of the 56 total penmanship guidelines between systems, 22, 39.29 percent, are identical. In other words, 22 of the penmanship guidelines between systems are common and can be applied to either system. Sixteen, 28.57 percent, are similar in the systems; and 18, 32.14 percent, are unique.

Three of the 32 Gregg guidelines are observations; that is, 29 are textually stated. Ten of the 24 South-Western guidelines are observations with 14 textually stated. Gregg DJ places more textual emphasis upon the writing accuracy and precision of shorthand outlines in terms of the number of guidelines given.

E. CHAPTER SUMMARY

The purpose of this chapter was to present a summary of the descriptive characteristics of Gregg DJ and SW Century 21 shorthand. In doing so, the shorthand alphabets, memory forms, abbreviated/contracted words, and textually declared and undeclared principles were summarized.

Shorthand Alphabet

Both systems utilize a basic phonetic alphabet. The phonetic guidelines for the alphabets are based upon different dictionary sources, which accounts for some of the minor discrepancies between shorthand outlines. The shorthand symbols come from essentially the same dot, circle, hook, straight, and curved symbols, with minor alterations to the Gregg x stroke.

Both systems use circles and half circles (hooks) to express vowel sounds. Both systems omit slightly sounded or unstressed, schwa-sounding

vowels in the body of an outline. SW Century 21 further omits the short i in the body of a word.

Two major differences occur in the expression of vowels between the systems. SW Century 21 uses single-direction symbols for the circle vowels, whereas Gregg DJ allows circles to be written in either direction depending upon the flow of the outline. In both systems most basic vowels are represented by one symbol with the exception of the long i and short i. Gregg further discriminates between the long u and short u sounds. Of the nine basic vowel sounds determined for the study, seven, 77.77 percent, are identical to the systems.

As with the writing of vowels, a major difference occurs between the systems in the writing of consonants. South-Western uses only single-direction symbols, whereas Gregg uses dual-direction symbols for the th, s-z, and x strokes to facilitate joining and maintain outline clarity. South-Western, on the other hand, combines letters. Two letters are assigned to one symbol with the g-j stroke and the w-v stroke. The s-z stroke is combined in both systems; however, Gregg uses dual-direction symbols for the consonants. Gregg DJ expands the use of symbols by using dual-direction symbols, whereas SW Century 21 condenses the use of separate symbols by assigning two letters to one symbol. The different approaches to the development of the shorthand alphabets produce a distinctive decision pattern for writers of the two systems. The Gregg writer must choose between dual symbols in the outline construction stage, whereas the South-Western writer must rely on content when transcribing dual-letter words. Of the consonants and digraphs identified for the study, 53.85 percent (14 of 26) have the same shorthand symbols.

Of the basic shorthand alphabets identified for the study--vowels, consonants, and digraphs--60 percent (21 of 35) have been assigned the same shorthand symbol in each system. The reassignment of the remainder of the strokes in South-Western has produced a more vertical writing pattern in South-Western than occurs in Gregg.

A further difference exists between the systems. Gregg DJ, where possible, builds upon the root word of an outline, while SW Century 21 strictly follows the pronunciation guide. The Gregg philosophy produces outlines that do not completely follow the phonetic guidelines but holds the root word constant in derivatives. The South-Western philosophy produces outlines that adhere to the phonetic guidelines of the system but may result in varying outlines for the same portion of a word in derivatives.

Memory Forms

Both systems employ memory forms. In Gregg DJ they are referred to as "brief forms" and in SW Century 21 as "speedforms." Memory forms do not follow any standard abbreviating form. The outlines may be derived from only one letter or sound of a word and are constructed to be written with unusual speed and facility. Both systems employed similar criteria in selecting memory-form words.

Gregg DJ's 129 brief forms represent 148 words, and SW Century 21's 175 speedforms represent 214 words. The majority of memory-form outlines represent only one word in each system. Neither system has an outline representing four or more words. Ninety-six memory forms are common to the two systems; 52 are unique to Gregg; and 118 are unique to South-Western.

Within the first 1,000 Mellinger high-frequency words, 80 percent of the memory forms common to Gregg and South-Western occur; 78.85 percent of the memory forms unique to Gregg occur; and 62.71 percent of the memory forms unique to South-Western occur.

Within the first 5,000 Mellinger high-frequency words, 95.83 percent of the memory forms common to Gregg and South-Western occur; 98.08 percent of the memory forms unique to Gregg occur; and 92.37 percent of the memory forms unique to South-Western occur. Both systems have memory forms beyond the first 5,000 words.

With the knowledge of Gregg brief forms, the Gregg writer knows 15.88 percent of the South-Western speed forms, and the South-Western writer knows 22.97 percent of the Gregg brief forms. As Gregg has fewer memory-form words than South-Western, the South-Western percentage of transfer is higher.

Abbreviated/Contracted Words

The designation "abbreviated/contracted words" refers to the abbreviated words of Gregg and the contracted/correspondence forms of South-Western. These words are commonly longer than memory forms and occur less frequently on high-frequency word lists than memory forms. In Gregg only the first part of the word is written, whereas in South-Western the first and subsequent distinctive sounds of the word are written. Gregg DJ presents 12 abbreviated words and South-Western presents 21 contracted words. The 21 words presented by South-Western provide writing patterns for contracted derivatives. In addition to the 12 abbreviated words, Gregg groups other words into families, which for the purpose of this study, were classified as joined word endings.

Both systems intend for writers to develop abbreviated/contracted outlines for long words frequently encountered in their particular writing situations. Of the abbreviated/contracted words presented, only one word, significance, is common to the two systems; and one Gregg abbreviated family word, delinquent, is common.

In addition to the contracted words, South-Western groups correspondence forms with this cluster. Several identical correspondence forms occur between the systems.

Textually Declared and Undeclared

Both systems have developed principles beyond the basic shorthand alphabets to expedite outline construction and to develop speed in writing outlines. For the purpose of this study, principles were divided into textually declared and undeclared principles by major theory groupings. The systems are described in detail in Appendix D. Each principle was analyzed for its identical, similar, or unique relationship to the principles of the other system. Percentages were determined for the relatedness of the systems. These percentages reflected the impact of one total system upon a particular theory grouping of the other system.

To present an overall summary of the two systems, two tables were developed to portray the system-wide application of principles by their relatedness to the other system. These tables represent a system-wide approach, and percentages were calculated on the original groups. Each principle was compiled with its original grouping to avoid overlapping principles and doubling numbers. This procedure accounts for the differences reported between figures in the text of Chapter IV and the two

summary tables. The identical, similar, or unique relatedness of the principle remains intact. If an observation were made that was included in the description of textually declared principles, the observation was added to the textually undeclared principles to maintain the dichotomy between textually declared and textually undeclared principles defined for the study. Each variation between the text of Chapter IV and the summary tables is explained in the footnotes to the tables.

Two tables are presented: the system-wide application of the Gregg system to the South-Western system, and the system-wide application of the South-Western system to the Gregg system. For the purpose of presenting the theory of the two systems, the theory background, basic vowels and vowel guidelines, and basic consonants and digraphs are computed in the tables. The penmanship guidelines are also broken out of the major principle groupings and listed separately. The textually declared principles are separated from the composite textually declared and undeclared figures.

The system-wide application of the Gregg system to the South-Western system is presented in Table 4.2. Seventy-five percent of the Gregg textually declared alphabetic components are identical to the South-Western system. Thus, 75 percent of the writer's knowledge of Gregg DJ alphabetic elements could transfer to the South-Western system. Twenty-five percent are unique and could not be applied to the South-Western system.

Of the ten major groupings summarized in the principles categories, 23.20 percent of the textually declared principles are identical. Again,

Table 4.2. Gregg DJ System-Wide Application of Textually Declared (TD) and Textually Undeclared (UND) Alphabet, Principles, and Penmanship Guidelines by Their Identical, Similar, and Unique Relationships to the SW Century 21 Shorthand System

Alphabet, Principles, and Penmanship Guidelines	Identical				Similar				Unique				Total			
	Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
ALPHABET																
Theory Background																
TD	2[a]	100.00			0	0.00			0	0.00			2[a]	100.00		
TD & UND			3	100.00			0	0.00			0	0.00			3	100.00
Basic Vowels and Vowel Guidelines																
TD	8[b]	88.89			0	0.00			1[c]	11.11			9	100.00		
TD & UND			10[b]	90.91			0	0.00			1	9.09			11	100.00
Basic Consonants and Digraphs																
TD	14	66.67			0	0.00			7	33.33			21[d]	100.00		
TD & UND			14	66.67			0	0.00			7	33.33			21	100.00
ALPHABET SUMMARY																
TD	24	75.00			0	0.00			8	25.00			32	100.00		
TD & UND			27	77.14			0	0.00			8	22.86			35	100.00
PRINCIPLES																
Vowel Principles																
TD	1	12.50			2	25.00			5	62.5			8	100.00		
TD & UND			1	3.85			2	7.69			23	88.46			26	100.00
Consonant Principles																
TD	0	0.00			1	25.00			3	75.00			4	100.00		
TD & UND			0	0.00			1	25.00			3	75.00			4	100.00
Bends and Blends																
TD	3	27.27			3[e]	27.27			5	45.45			11[e]	100.00*		
TD & UND			3	20.00			4	26.67			8	53.33			15	100.00
Word Beginnings--Disjoined																
TD	3	30.00			4[f]	40.00			3	30.00			10[f]	100.00		
TD & UND			3	30.00			4	40.00			3	30.00			10	100.00
Word Beginnings--Joined																
TD	8	42.11			7[g]	36.84			4	21.05			19[g]	100.00		
TD & UND			8	36.36			7	31.82			7	31.82			22	100.00
Word Endings--Disjoined																
TD	6	42.86			3[h]	21.43			5	35.71			14[h]	100.00		
TD & UND			6	40.00			3	20.00			6	40.00			15	100.00
Word Endings--Joined																
TD	4	16.67			9[i]	37.50			11	45.83			24[i]	100.00		
TD & UND			4	14.29			9	32.14			15	53.57			28	100.00

Table 4.2. (continued)

Alphabet, Principles, and Penmanship Guidelines	Identical				Similar				Unique				Total			
	Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
PRINCIPLES (continued)																
Miscellaneous Shorthand Principles																
TD	0	0.00			8[j]	88.89			1	11.11			9[j]	100.00		
TD & UND			0	0.00			11[j]	91.67			1	8.33			12[j]	100.00
Joining Principles																
TD	1	5.26			3[k]	15.79			15	78.95			19[k]	100.00		
TD & UND			4	10.53			7[k]	18.42			27	71.05			38[k]	100.00
Auxiliary Rules																
TD	3	42.86			4[l]	57.14			0	0.00			7[l]	100.00		
TD & UND			3	33.33			6[l]	66.67			0	0.00			9[l]	100.00
PRINCIPLES SUMMARY																
TD	29	23.20			44	35.20			52	41.60			125	100.00		
TD & UND			32	17.88			54	30.17			93	51.95			179	100.00
Writing Accuracy and Precision																
TD	10[m]	34.48			6[n]	20.69			13	44.83			29	100.00		
TD & UND			11[m]	34.38			8[n]	25.00			13	40.62			32	100.00
TOTAL																
TD	63	33.87			50	26.88			73	39.25			186	100.00		
TD & UND			70	28.46			62	25.20			114	46.34			246	100.00

*Rounded to achieve 100.00 percent.

[a]Observation on circles and strokes compiled with textually undeclared.

[b]Observations on basic sound written in the outlines and written at the beginning and endings of outlines compiled with textually undeclared.

[c]Unique: Gregg short i with South-Western short i. Gregg long u compiled with original vowel principles grouping.

[d]Consonants: c uses the sounds of k and s; q, w, x, y compiled with principles.

[e]Ngk compiled with original consonant grouping.

[f]Saint compiled with original Cities in miscellaneous grouping.

[g]Pre-, pro- deleted; New compiled with original Cities in miscellaneous grouping.

[h]-ology, -titude,-titute, and -ual compiled with original word endings--joined grouping.

[i]-gram compiled with original word endings--joined grouping.

[j]Observations on Miscellaneous Abbreviations, Ordinal Numbers, and the man-men compound compiled with undeclared principles.

[k]Observations on circle i and s joining compiled with textually undeclared.

[l]Observation on Numbers compiled with undeclared. Contraction compiled with declared as examples are given in textbook depicting distinction between contractions and phrases.

[m]Observation on ng, nk compiled with textually undeclared.

[n]Observations on jog and ya, ye compiled with undeclared; three similar guidelines on r and l added to textually declared.

the Gregg writer could transfer 23.20 percent of the stated principles from the Gregg system to the South-Western system. Combining the textually declared principles with the textually undeclared principles into a composite figure, 17.88 percent of the total principles would apply to the South-Western system.

Forty-four, 35.20 percent, of the textually declared principles are similar, with 54, 30.17 percent, of the total textually declared and undeclared principles similar. As the similar category refers to the same or alike portion of a word or words but expresses it in different ways, the occasion for negative transfer of learning would be higher in the similar category. The Gregg writer would be aware of a similar Gregg principle but would not be able to apply the Gregg constuction to the South-Western system. Most, however, of the textually declared, 41.60 percent, and the composite textually declared and undeclared principles, 51.95 percent, are unique to Gregg and would not transfer to the South-Western system.

With the penmanship guidelines (writing accuracy and precision) over one-third, 34.48 percent, of the Gregg textually declared writing concepts would be transferable to South-Western shorthand. Of the similar penmanship guidelines, 20.69 percent of the textually declared and 25 percent of the composite textually declared and undeclared guidelines are similar to South-Western; 44.83 percent of the textually declared and 40.62 percent of the composite textually declared and undeclared are unique.

Of the entire Gregg system, including alphabets, principles, and penmanship guidelines, 33.87 percent of the 186 textually declared and 28.46 percent of the 246 composite textually declared and undeclared

components are identical to the South-Western system. Thus, nearly one-third of the theory presented in the Gregg shorthand textbook, as identified for this study, is transferable to the South-Western system.

Fifty, 26.88 percent, of the textually declared and 62, 25.20 percent of the composite textually declared and undeclared elements are similar. Seventy-three, 39.25 percent, of the textually declared are unique with 114, 46.34 percent, of the composite textually declared and undeclared unique. Thus, of the textually declared elements identified in Gregg DJ, 33.87 percent are identical to South-Western; 26.88 percent are similar; and 39.25 percent are unique.

The system-wide application of the South-Western system to the Gregg DJ system is presented in Table 4.3. Seventy-five percent of the textually declared alphabetic components are identical to the Gregg system. Thereby, 75 percent of the SW Century 21 alphabetic elements could transfer to the Gregg DJ elements. Twenty-five percent are unique and could not be applied to the Gregg system. These percentages match the Gregg application to the South-Western system even though the total number of alphabetic elements is different.

As indicated in the summary of the major principle groupings, 25.2 percent of the textually declared principles are identical. Including all the textually undeclared principles and observations with the textually declared principles, 24.29 percent could apply to the Gregg system. Fifty-one, 41.46 percent, of the textually declared principles are similar with 54, 38.57 percent, of the composite textually declared and undeclared principles similar. One-third, 33.33 percent, of the textually declared and 37.14 percent of the composite textually declared

Table 4.3. SW Century 21 System-Wide Application of Textually Declared (TD) and Textually Undeclared (UND) Alphabet, Principles, and Penmanship Guidelines by Their Identical, Similar, and Unique Relationships to the Gregg DJ Shorthand System

Alphabet, Principles, and Penmanship Guidelines	Identical				Similar				Unique				Total			
	Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
ALPHABET																
Theory Background																
TD	3	100.00			0	0.00			0	0.00			3	100.00		
TD & UND			3	100.00			0	0.00			0	0.00			3	100.00
Basic Vowels and Vowel Guidelines																
TD	10	90.91			0	0.00			1[a]	9.09			11	100.00		
TD & UND			10	90.91			0	0.00			1	9.09			11	100.00
Basic Consonants and Digraphs																
TD	14	63.64			0	0.00			8	36.36			22[b]	100.00		
TD & UND			14	63.64			0	0.00			8	36.36			22	100.00
ALPHABET SUMMARY																
TD	27	75.00			0	0.00			9	25.00			36	100.00		
TD & UND			27	75.00			0	0.00			9	25.00			36	100.00
PRINCIPLES																
Vowel Principles																
TD	1	11.11			2	22.22			6	66.67			9	100.00		
TD & UND			1	10.00			2	20.00			7	70.00			10	100.00
Consonant Principles																
TD	0	0.00			0	0.00			1[c]	100.00			1[c]	100.00		
TD & UND			0	0.00			0	0.00			3	100.00			3	100.00
Bends and Blends																
TD	3	33.33			4	44.44			2	22.22			9	100.00*		
TD & UND			3	30.00			5	50.00			2	20.00			10	100.00
Word Beginnings--Disjoined																
TD	3	37.50			5	62.5			0	0.00			8	100.00		
TD & UND			3	37.50			5	62.5			0	0.00			8	100.00
Word Beginnings--Joined																
TD	10	50.00			8	40.00			2	10.00			20	100.00		
TD & UND			10	45.45			8	36.36			4	18.18			22	100.00*
Word Endings--Disjoined																
TD	6	27.27			5[d]	22.73			11	50.00			22[d]	100.00		
TD & UND			6	26.09			5	21.74			12	52.17			23	100.00
Word Endings--Joined																
TD	4	26.67			7[e]	46.66			4	26.67			15[e]	100.00*		
TD & UND			4	26.67			7	46.66			4	26.67			15	100.00*

Table 4.3. (continued)

Alphabet, Principles, and Penmanship Guidelines	Identical				Similar				Unique				Total			
	Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared		Textually Declared		Textually Declared & Undeclared	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
PRINCIPLES (continued)																
Miscellaneous Shorthand Principles																
TD	0	0.00			10[f]	100.00			0	0.00			10[f]	100.00		
TD & UND			0	0.00			10	100.00			0	0.00			10	100.00
Joining Principles																
TD	1	5.26			5	26.32			13	68.42			19	100.00		
TD & UND			4	14.81			6	22.22			17	62.96			27	100.00*
Auxiliary Rules																
TD	3	30.00			5	50.00			2	20.00			10	100.00		
TD & UND			3	25.00			6	50.00			3	25.00			12	100.00
PRINCIPLES SUMMARY																
TD	31	25.20			51	41.46			41	33.33			123	100.00*		
TD & UND			34	24.29			54	38.57			52	37.14			140	100.00
Writing Accuracy and Precision																
TD	6[g]	42.86			3[h]	21.43			5	35.71			14	100.00		
TD & UND			11[g]	45.83			8[h]	33.33			5	20.83			24	100.00*
TOTAL																
TD	64	36.99			54	31.21			55	31.79			173	100.00*		
TD & UND			72	36.00			62	31.00			66	33.00			200	100.00

*Rounded to achieve 100.00 percent.

[a]Unique: South-Western u with Gregg long u. South-Western internal short i compiled with vowel principles.

[b]Consonants: c uses the sounds of k and s; q and x compiled with undeclared principles; y compiled with consonant principles.

[c]Nk compiled with original Bends and Blends grouping.

[d]-gram compiled with original Miscellaneous grouping.

[e]-alogy,-ology, -titude,-titute,-tude, and -ual compiled with original Word Endings--Disjoined grouping.

[f]Countries compiled with original Miscellaneous grouping.

[g]Observations on pb fluency, disjoined word beginnings, circle i (2), o,u compiled with textually undeclared.

[h]Observations on oi, ld and the three similar r and l guidelines compiled with textually undeclared.

and undeclared principles are unique to South-Western and could not be transferred to the Gregg system.

With the penmanship guidelines (writing accuracy and precision), 42.86 percent of the South-Western textually declared writing concepts could be transferred to Gregg. Of the similar penmanship guidelines, 21.43 percent of the textually declared and 33.33 percent of the composite textually declared and undeclared are similar to Gregg; 35.71 percent of the textually declared and 20.83 percent of the composite textually declared and undeclared are unique.

Of the entire South-Western system, including alphabets, principles, and penmanship guidelines, 36.99 percent of the 173 textually declared and 36 percent of the 200 composite textually declared and undeclared components are identical to the Gregg system. Thus, 36.99 percent of the theory presented in the South-Western shorthand textbook, as identified for this study, is transferable to the Gregg system. Fifty-four, 31.21 percent, of the textually declared and 62, 31 percent, of the composite textually declared and undeclared elements are similar. Fifty-five, 31.79 percent, of the textually declared are unique with 66, 33 percent, of the composite textually declared and undeclared unique. Thus, of the textually declared elements identified in the South-Western shorthand system for this study, 36.99 percent are identical to Gregg; 31.21 percent are similar; and 31.79 percent are unique.

CHAPTER V

ANALYSES OF THE FIRST 1,000 MELLINGER WORDS AND THE 3,000 RUNNING SHORTHAND-COUNTABLE WORDS

The purpose of this chapter is to present the data obtained from the second and third phases of the study: analysis of the first 1,000 Mellinger words and the analysis of 3,000 running shorthand-countable words. Materials pertinent to the further explanation of the data in this chapter are included in Appendix E.

A. ANALYSIS OF MELLINGER'S 1,000 MOST FREQUENTLY USED WORDS

The first 1,000 most frequently used words as listed in Mellinger's Basic Vocabulary for Written Business Office Communications[1] were analyzed in this phase of the study. These words represent 81.43 percent of the vocabulary of written business office communications. A recording form was developed to accommodate the Mellinger frequency and rank order of the word; the word itself; syllabic intensity; shorthand stroke count for each system; methods of writing designation for each system; and principles applied in each system. This information was keypunched onto data cards.

Shorthand outlines were checked with each system's shorthand dictionary, and the phonetic guidelines of the words were checked where appropriate. The Webster dictionary was the phonetic source checked for the Gregg system and the Thorndike-Barnhart dictionary for the South-Western system.

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[1]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

The 1,000 words were viewed from two perspectives: (1) methods of writing, and (2) textually declared and undeclared principles in the word. Each of these levels was viewed by the cumulative word groups of 10, 50, 100, and each successive 100-word group. Within each level, a uniform sequencing occurs: frequency count, syllabic intensity, and stroke count. Stroke count as a function of syllabic intensity was analyzed for each system at the 100, 500, and 1,000 cumulative groupings. Finally, a model was developed for each system based upon the weighted Mellinger frequency of the methods of writing and principles as used in each system. A computer program was written to produce listings of the 1,000 words by the methods of writing and principles used in each system. Sample computer printout pages are included in Appendix A.

The major analysis of the 1,000 words was completed using a PL/1 computer program. The _t_ test was used where appropriate to ascertain the significance of the difference between the means of the two systems. Each variance was subjected to the F-ratio, and the use of the separate variance or pooled variance _t_ formula was based upon the four-fold scheme presented by Popham and Sirotnik.[2] Two short Fortran IV computer programs were written to compute the separate variance and the pooled variance _t_ tests. The chi-square test[3] was used to determine if differences existed between systems in the methods of writing and principles used in each system. The Significance of a Difference Between

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[2]W. James Popham and Kenneth A. Sirotnik, Educational Statistics, Use and Interpretation, 2nd ed. (New York: Harper & Row, Publishers, 1973), p. 141.

[3]Ibid., pp. 273-77.

Proportions test[4] was used to determine if significant differences occurred between the number of decision-point principles listed and used in writing the first 1,000 words in each system. The .05 level of significance was established as the base for data interpretation.

Methods of Writing

Each of the 1,000 words was classified by the methods of writing: alphabetic, abbreviated/contracted, memory (including memory-form derivatives) and/or shorthand theory words. Alphabetic words contain no shorthand principles in the word. They were considered "written in full" as they were written using knowledge of the basic shorthand alphabet. (Joining and textually undeclared decision points were recorded independent of the methods of writing.) Abbreviated/contracted words were those words designed by Gregg as abbreviated words and by South-Western as contracted/correspondence forms. Memory forms included those words classified as brief forms and brief form derivatives in Gregg and speedforms and speedform related words in South-Western.

Both the memory forms and memory-form derivative words as well as the abbreviated/contracted words were checked for shorthand principles within the words. Each of these words was checked for its point of introduction in the respective textbooks. If the shorthand principle was introduced in the same or a preceding lesson prior to the introduction of the word, the word was considered to include that principle.

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[4]Frederick C. Mills, Statistical Methods, 3rd ed. (New York: Henry Holt and Co., 1955), pp. 223-26.

The methods of writing the first 1,000 Mellinger words were subjected to the following indicators: frequency, syllabic intensity, and stroke count.

Frequency. The methods of writing Mellinger's first 1,000 words in Gregg DJ (G) and South-Western Century 21 (SW) are presented in Table 5.1 by cumulative word groups. If two methods of writing were used in forming a word, the word was tabulated in each method. This procedure accounts for the frequency of the total methods used amounting to more than 1,000. As previously defined, joining principles and textually undeclared principles were not included in this level of analysis.

In the 10-word grouping, representing 26.08 percent of written business office communications, 11 methods of writing are utilized by both systems. The majority of the words in the 10-word group are memory forms (G 8; SW 6) with one alphabetic word in Gregg and three in South-Western. Two words in each system utilize shorthand theory. In Gregg and South-Western, the memory form and contains the nd blend in Gregg and the nd bend in South-Western. Also, in South-Western the memory form for is made up of the fr bend; and in Gregg, the word we utilizes the w at beginning of words principle.

In the 100-word group, accounting for 55.61 percent of written business office communications, more than half the outline constructions of both systems are developed by memory and memory related words. Both systems claim to use memory forms with high-frequency words; and of the first 100 most frequently used words, 55 in each system utilize memory forms. Nearly 30 percent of the outline construction patterns in this group represent alphabetic words.

Table 5.1. Methods of Writing the First 1,000 Mellinger Words[a] in Gregg DJ and SW Century 21 Shorthand by Cumulative Word Groupings

Cumulative Word Grouping[b]	Methods of Writing									
	Alphabetic		Abbreviated/ Contracted		Memory		Shorthand Theory Words		Word Group Total	
	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western
10	1	3	-	-	8	6	2	2	11	11
50	14	12	-	2	33	34	6	4	53	52
100	33	31	-	2	55	55	19	20	107	108
200	69	66	-	3	85	93	60	55	214	217
300	118	109	-	4	99	119	103	93	320	325
400	142	140	1	6	119	153	169	142	431	441
500	179	175	1	6	129	180	227	191	536	552
600	212	199	1	6	143	211	288	252	644	668
700	243	225	1	7	157	234	354	316	755	782
800	278	259	1	7	170	255	412	374	861	895
900	306	286	2	8	184	277	476	434	968	1005
1000	342	323	2	8	198	304	535	489	1077	1124
p[c]	.3175	.2874	.0019	.0071	.1838	.2705	.4968	.4351	1.0000	1.0000
χ^2	0.847	0.811	1.708	1.634	9.239	8.853	2.298	2.202	27.592[d]	

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]If two methods of writing were used in forming the word, the word was counted in each classification.

[c]Proportions.

[d]A χ^2 value of 16.268 required for 3 degrees of freedom at the .001 level of significance.

In the first 500 words, portraying 73.28 percent of written business office communications, the use of shorthand principles has increased in both systems (G 227; SW 191) to represent the most frequent method of outline construction (total G 536; total SW 552). This increase reflects the introduction of less frequently used words than was present in the first 10- and 100-word groups. The alphabetic words represent the second most frequent method of writing (G 179; SW 175).

In the 1,000-word group, depicting 81.43 percent of written business office communications, shorthand principles are used with such regularity in developing shorthand outlines that nearly half the total outline construction methods (535 of 1077 G total; 489 of 1124 SW total) represent use of shorthand principles. Alphabetic words represent nearly 30 percent of the methods of writing used by the systems (342 G; 323 SW).

As memory words are a finite number in each system, the impact of the memory words decreases as the word base is extended to the 1,000-word level. In Table 4.1, page 121, summarizing the memory forms common and unique to Gregg and South-Western, the majority of common memory forms is shown to occur within the first 500 words. The majority of the memory forms unique to Gregg also occurs within the first 500 words, and the majority of the memory forms unique to South-Western occurs within the first 1,000 words. As South-Western memory forms represent 214 words compared with Gregg memory forms representing 148 words, greater opportunity for memory-form derivatives occurs in South-Western. That is, in the 100-word group, over half the methods of writing for both systems involved memory words; in the 500-word group, the proportion dropped to one in four methods of writing in Gregg and nearly one in three methods

in South-Western. In the 1,000-word group the memory-form words proportion dropped to nearly one in five methods of outline construction in Gregg with slightly more than one in four in South-Western.

Abbreviated/contracted words represent only a small portion (G 2; SW 8) of the methods of writing used in developing the outlines of the first 1,000 words. Of the eight contracted/correspondence forms used by South-Western (cordially, doctor, gentlemen, Mr., Mrs., schedule, scheduled, sincerely), three (gentlemen, Mr., and Mrs.) are classified as brief forms in Gregg DJ. The South-Western correspondence forms cordially and sincerely have shortened forms in Gregg when utilized in complimentary closings. Elsewhere, however, the outlines are written according to Gregg system guidelines. Doctor is written in full in Gregg DJ and schedule is written utilizing shorthand principles. The two abbreviated words occurring in Gregg in the first 1,000 words are convenience and convenient, which are listed as speedforms in South-Western. Thus, the abbreviated/contracted and memory-form categories as identified by the individual systems list words in one system using one method of writing and in the other system using the other method.

The chi-square test was applied to determine if the differences between the systems in the methods used to construct shorthand outlines for the first 1,000 words are significant. The resulting χ^2 value of 27.592 is significant beyond the .001 level. Thus, the two systems do not employ the same proportional patterns of outline construction for the first 1,000 words. The major contributor to the difference between the systems is the memory group. Gregg DJ uses proportionally less memory forms to construct the outlines than SW Century 21 (G .1838;

SW .2705). The difference in the shorthand theory words contributes to a smaller extent to the overall construction pattern difference. Gregg DJ uses proportionally more shorthand theory words than does SW Century 21 (G .4968; SW .4351). The alphabetic words represent approximately 30 percent of the outline construction methods of each system (G .3175; SW .2874) but contribute little to the difference in the methods of writing between the systems. The difference between the systems in constructing alphabetic words within the first 1,000 words is more likely attributable to chance than to a built-in difference between the systems. The use of abbreviated/contracted words in both systems is minimal within the first 1,000 words.

Syllabic intensity. The average syllabic intensity by methods of writing the first 1,000 Mellinger words in Gregg DJ and SW Century 21 is presented in Table 5.2 by cumulative word groups. Syllabic intensity gradually increases from an average of 1.0 for both systems in the 10-word group to an average of 2.051 syllabic intensity for Gregg and 2.087 for South-Western in the 1,000-word group. As less frequently used words are added, the length of the words, as determined by syllabic intensity, increases.

At the 1,000-word level, *t* tests were computed on the average syllabic intensity of each method of outline construction. The memory method of writing produced a significantly different syllabic intensity between systems at the .01 level of confidence. On the average, the syllabic intensity per word of memory forms and derivatives in Gregg is 2.0 while the South-Western average is 2.286. In writing the first 1,000 Mellinger words, memory words in Gregg are composed of significantly

Table 5.2. Average Syllabic Intensity by Methods of Writing the First 1,000 Mellinger Words[a] in Gregg DJ and SW Century 21 Shorthand by Cumulative Word Groupings

Cumulative Word Grouping[b]	Methods of Writing: Alphabetic		Abbreviated/ Contracted		Memory		Shorthand Theory Words		Word Group Total	
	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western
10	1.000	1.000	--	--	1.000	1.000	1.000	1.000	1.000	1.000
50	1.071	1.000	--	2.500	1.061	1.059	1.333	1.000	1.094	1.096
100	1.242	1.097	--	2.500	1.182	1.291	1.684	1.700	1.290	1.333
200	1.217	1.151	--	2.667	1.341	1.570	2.050	1.909	1.500	1.544
300	1.246	1.202	--	2.750	1.454	1.655	2.107	2.043	1.587	1.628
400	1.289	1.328	3.000	2.500	1.563	1.876	2.266	2.148	1.752	1.798
500	1.352	1.406	3.000	2.500	1.636	1.994	2.313	2.183	1.830	1.879
600	1.443	1.432	3.000	2.500	1.776	2.114	2.351	2.238	1.925	1.961
700	1.457	1.431	3.000	2.428	1.841	2.162	2.356	2.266	1.960	1.996
800	1.482	1.459	3.000	2.428	1.859	2.192	2.371	2.283	1.984	2.020
900	1.503	1.493	3.000	2.375	1.929	2.249	2.395	2.316	2.026	2.064
1000	1.506	1.511	3.000	2.375	2.000	2.286	2.413	2.339	2.051	2.087
Standard Deviation	0.697	0.753	0.000	0.517	1.131	1.132	0.985	0.951	1.015	1.019
t value	-0.089		--[c]		-2.769[d]		1.214		-0.853	

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]If two methods of writing were used, the word was counted in each classification.

[c]The *t* value was not calculated on frequency of two.

[d]Significant at the .01 level.

smaller syllabic intensity than memory words in South-Western. No statistically significant difference occurs between systems, however, on the overall average syllabic intensity of all methods combined.

A pattern emerged in both systems when the methods of writing were compared on the basis of syllabic intensity: alphabetic words on the average are shorter than the memory words; and the memory words, in turn, are shorter than the shorthand theory words.

Stroke count. The average stroke count by methods of writing the first 1,000 Mellinger words in Gregg DJ and SW Century 21 shorthand is presented in Table 5.3 by cumulative word groups. The shorthand stroke counts as defined for this study are included in Appendix A.

The average stroke count per word increases as the word groups expand from the 10 most frequently used words to the 1,000 most frequently used words, as did the syllabic intensity summarized in Table 5.2. The average shorthand strokes per word by all methods of writing at the 10-word group is 1.182 for both Gregg and South-Western. Thereafter, for each cumulative word group, the average shorthand stroke per word indicates a smaller average stroke count for South-Western. At the 1,000-word level, the average per word stroke count of 4.049 shorthand strokes for Gregg and 3.883 for South-Western is significantly different.

With memory forms and memory-related words, however, the role is reversed. The average memory word in the first 1,000 words written in Gregg shorthand requires 2.793 shorthand strokes per word compared to 3.191 strokes in South-Western. This difference is significant at the .01 level of significance.

Table 5.3. Average Stroke Count by Methods of Writing the First 1,000 Mellinger Words[a] in Gregg DJ and SW Century 21 Shorthand by Cumulative Word Groupings

Cumulative Word Grouping[b]	Methods of Writing: Alphabetic		Abbreviated/ Contracted		Memory		Shorthand Theory Words		Total	
	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western
10	2.000	1.667	--	--	1.000	1.000	1.500	1.000	1.182	1.182
50	2.500	2.000	--	2.500	1.273	1.294	2.667	1.250	1.755	1.500
100	2.939	2.419	--	2.500	1.564	1.691	2.842	2.650	2.215	2.092
200	3.188	2.909	--	2.333	1.800	2.043	3.600	3.073	2.752	2.571
300	3.398	3.156	--	2.500	1.949	2.252	3.796	3.344	3.078	2.871
400	3.493	3.364	3.000	2.833	2.126	2.516	4.160	3.690	3.376	3.168
500	3.670	3.548	3.000	2.833	2.287	2.689	4.273	3.817	3.591	3.353
600	3.811	3.618	3.000	2.833	2.420	2.820	4.323	3.992	3.730	3.500
700	3.840	3.644	3.000	3.286	2.522	2.910	4.364	4.120	3.811	3.614
800	3.917	3.714	3.000	3.286	2.618	3.031	4.417	4.241	3.899	3.736
900	3.984	3.787	3.500	3.125	2.728	3.119	4.500	4.332	3.998	3.833
1000	4.012	3.839	3.500	3.125	2.793	3.191	4.540	4.356	4.049	3.883
Standard Deviation	1.320	1.261	0.707	1.356	1.478	1.436	1.549	1.547	1.598	1.515
t value	1.723		--[c]		-2.998[d]		1.903		2.493[e]	

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]If two methods of writing were used in forming the word, the word was counted in each classification.

[c]The t value was not calculated on frequency of two.

[d]Significant at the .01 level.

[e]Significant at the .05 level.

The difference of less than .2 strokes per word between systems in writing alphabetic words (G 4.012; SW 3.839) is not significant. Likewise, the average per word shorthand stroke difference for the shorthand theory words (G 4.540; SW 4.356) is not significant. The *t* value was not calculated on the abbreviated/contracted group as a frequency of two occurred in the Gregg system.

Thus, for the first 1,000 words, the overall average stroke count for Gregg DJ is higher (.166 strokes per word) than the SW Century 21 stroke count. With memory words, however, the average Gregg outline has fewer shorthand strokes (.398 strokes per word) than the South-Western outline. Comparing the syllabic intensity and the stroke counts of the memory group in the first 1,000 words, a significantly smaller Gregg syllabic intensity occurred and a subsequently smaller stroke count resulted in the Gregg system than in the South-Western system. This difference is significant at the .01 level.

A different pattern of increase occurred with the stroke counts as compared with the syllabic intensity. The memory words of both systems require fewer shorthand strokes to construct the outline than the alphabetic words; the alphabetic words require fewer shorthand strokes than the shorthand theory words.

Shorthand Principles

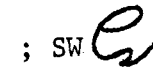
Each of the 1,000 words was classified by the principles used in writing the word. Eleven categories of principles were determined: bends and blends, consonants, vowels, word beginnings--disjoined, word beginnings--joined, word endings--disjoined, word endings--joined, miscellaneous, joinings, auxiliary rules, and undeclared principles. Excluding

the joinings and undeclared principles, these categories represent a breakdown of the shorthand theory word classification in the methods of writing.

The word beginnings and word endings were broadened to include other smaller groups which could appropriately fit into these categories such as word compounds, proper name elements, ellipses, and geographical terminations. The miscellaneous shorthand group included principles that have a shorthand character written in some portion of the word but did not fit into the previously listed categories. Auxiliary rules, however, contain nonshorthand elements. The joining principles present rules for connecting shorthand symbols. Undeclared principles represent those principles stated in references other than those in the beginning shorthand textbook or shorthand dictionary reference.

The memory load of a word as defined for this study was made up of the decision points in that word. The decision points were determined by comparing the phonetics of the word and the written shorthand outline to a two-part question: (1) Can a dictionary-correct outline be written without knowledge of the specific principle; and (2) Can an alternative outline be written without knowledge of the principle?

As the memory load of a word was originally defined as the decision points in that word, the inclusion of the joining and undeclared principles was essential to the determination of the decision points within a word. For example, in both Gregg and South-Western shorthand, outlines may be considered alphabetic as the outlines contain no shorthand principles. Only primary shorthand alphabetic strokes are used to construct the outline. To be able to execute a dictionary-correct outline, however, the shorthand strokes must be joined properly.

Mellinger word No. 490 approval (G:  ; SW ) is an example of an alphabetic word in both systems. The outlines contain no shorthand principles beyond the primary shorthand alphabet; however, joining and undeclared principles occur in both systems.

Three joining and undeclared decision points occur in Gregg DJ to be able to construct a dictionary-correct outline for the word approval:

1. No. 901: Circles are written inside curves and outside angles.
2. No. 072: The oo-hook is tucked under when it follows r or l.
3. No. 074: When a vowel is omitted between two reverse curves, the curves are written with an angle to indicate the vowel omission.

Four joining and undeclared decision points occur in SW Century 21 to construct a dictionary-correct outline for the word approval:

1. No. 903: After a horizontal stroke, u is turned under.
2. No. 904: When a beginning vowel precedes a consonant, the base of the consonant is on the line of writing.
3. No. 909: All circle vowels are written and joined in the dominant, longhand direction.
4. No. 061: An initial circle vowel preceded by a downward, curved stroke is joined on the inside of the curved stroke.

Thus, as this example indicates, even though an outline may be considered alphabetic, additional decisions are made by the shorthand writer that add to the memory load of the word.

The analysis of the principles in both systems involve the following: the principles listed and used in the first 1,000 words; frequency of principles by theory categories; frequency of textually declared and undeclared decision points; average syllabic intensity; and average stroke count. Only decision-point principles are included in the analysis.

Principles listed and used. The principles listed and used within each system are presented in Table 5.4. One hundred seventy decision-point principles were identified in Gregg DJ shorthand and 122 were identified for SW Century 21 shorthand. Of those identified principles, 122, 71.76 percent, are used in Gregg DJ in writing the first 1,000 Mellinger words. Eighty-seven, 71.31 percent, are used in South-Western. Thus, of all principles beyond the basic shorthand alphabets found to occur in both systems, approximately 28 percent (G 28.24 percent; SW 28.69 percent) are not used in either system within the first 1,000 most frequently used words. The Significance of a Difference Between Proportions test was applied to ascertain the proportion of the principles listed and used by each system in writing the 1,000 words. At the .05 level, no significant difference in the proportions of the principles used by each system occurred ($T = 0.835$).

Of the textually declared principles, the four categories with the largest differences between the number listed within the system and the number used within the 1,000 words were the same for each system: word beginnings--joined, word endings--disjoined, word endings--joined, and miscellaneous. Of the 118 textually declared principles identified for Gregg DJ, 85, 72.03 percent, were used. One hundred five textually declared principles were identified for SW Century 21 with 71, 67.62 percent, used in the first 1,000 words.

Frequency. The frequency of the principles used in writing the first 1,000 Mellinger words is summarized in Table 5.5 for the Gregg DJ and SW Century 21 theory categories by cumulative word groups. As the values in this table reflect the decision points within the words at the

Table 5.4. Principles Listed and Used in Writing the First 1,000 Mellinger Words[a] in Gregg DJ and SW Century 21 Shorthand by Theory Categories

Theory Category[b]	Gregg Principles		South-Western Principles	
	Listed	Used	Listed	Used
Bends & Blends	11	11	9	9
Consonants	4	4	1	1
Vowels	8	8	9	5
Word Beg.--Disj.	10	5	8	5
Word Beg.--Joined	18	13	15	9
Word End.--Disj.	14	7	22	17
Word End.--Joined	24	17	14	8
Miscellaneous	8	1	8	2
Joinings	19	17	16	12
Auxiliary	2	2	3	3
Undeclared	52	37	17	16
Total	170*	122	122*	87
p	.7176		.7131	
$p_1 - p_2$	.0045			
T[c]	.0835[d]			

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]If two or more principles were used in forming a word, the word was counted in each principle.

[c]Significance of a Difference Between Proportions

[d]T value of 1.960 required for .05 level of significance.

*Only those principles determined to contain decision points.

Table 5.5. Frequency of Gregg DJ and SW Century 21 Principles in the First 1,000 Mellinger Words[a] by Theory Category and Word Groupings

Theory Category[b]	Cumulative Word Groupings												p[c]	χ^2
	10	50	100	200	300	400	500	600	700	800	900	1000		
Bends & Blends														
Gregg	1	2	3	14	33	52	70	97	118	148	170	178	.0827	0.149
South-Western	2	3	5	13	28	43	56	72	89	113	132	144	.0883	0.196
Consonants														
Gregg	1	2	2	4	8	13	14	15	18	19	23	24	.0111	6.708
South-Western	–	–	–	–	–	–	–	–	1	1	1	1	.0006	8.863
Vowels														
Gregg	–	1	7	16	24	33	41	47	58	72	83	94	.0437	7.038
South-Western	–	1	6	11	26	29	41	53	79	94	109	123	.0755	9.293
Word Beg.--Disj.														
Gregg	–	–	–	2	2	2	3	3	6	6	7	10	.0046	0.167
South-Western	–	–	–	4	4	4	5	5	8	8	8	10	.0061	0.220
Word Beg.--Joined														
Gregg	–	–	3	14	28	47	66	82	100	118	139	158	.0734	2.993
South-Western	–	–	2	10	13	25	38	43	52	61	75	84	.0515	3.951
Word End.--Disj.														
Gregg	–	–	2	5	10	23	29	38	48	58	65	69	.0321	31.743
South-Western	–	–	2	11	21	40	52	78	104	131	148	167	.1025	41.911
Word End.--Joined														
Gregg	–	1	5	17	25	44	67	84	102	111	138	167	.0776	11.079
South-Western	–	–	4	8	9	16	24	33	36	39	51	60	.0368	14.629
Miscellaneous														
Gregg	–	–	–	–	–	–	–	1	1	1	1	1	.0005	1.200
South-Western	–	–	1	1	1	2	3	4	4	4	4	4	.0025	1.591
Joinings														
Gregg	1	21	53	135	242	338	467	588	700	824	956	1094	.5084	1.403
South-Western	1	9	34	97	161	234	316	410	484	572	677	761	.4669	1.852
Auxiliary														
Gregg	–	–	–	–	–	1	1	2	3	3	4	4	.0019	0.816
South-Western	–	–	–	–	1	2	3	4	5	5	7	7	.0043	1.078
Undeclared														
Gregg	–	4	8	25	54	93	136	199	235	280	322	353	.1640	0.002
South-Western	–	3	7	25	42	67	99	136	165	210	246	269	.1650	0.003
Total														
Gregg	3	31	83	232	426	646	894	1156	1389	1640	1908	2152	1.0000	146.885[d]
South-Western	3	16	61	180	306	462	637	838	1027	1238	1458	1630	1.0000	

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]If two or more principles were used in forming a word, the word was counted in each principle.

[c]Proportions.

[d]A χ^2 value of 29.588 required for 10 degrees of freedom at the .001 level.

principles level, the progressive accumulation of decision points for each theory category is indicated by each additional 100 words.

Within the first 100-word group, representing 55.61 percent of written business office communications, 83, 3.86 percent, of the total 2,152 decision points within the theory categories of the Gregg system occur; and 61, 3.74 percent, of the 1,630 decision points within the theory categories of the South-Western system occur. This low percentage indicates only a small portion of the memory load in the systems associated with the use of principles occurs at this frequency word group.

Within the first 500 words, representing 73.28 percent of the written business office communications as determined by Mellinger, 894, 41.54 percent, of the Gregg decision points associated with the theory categories occur; and 637, 39.08 percent, of the South-Western decision points associated with the theory categories occur. Thus, the greater portion of principles occur between the 500- and 1,000-word groups compared with the first 500 most frequently used words.

In the first 1,000 words, those words using principles beyond the basic shorthand alphabet in Gregg DJ required 2,152 decision points to construct the shorthand outlines. These 2,152 decision points are disbursed within the system as follows: blends, 178, 8.27 percent; consonants, 24, 1.11 percent; vowels, 94, 4.37 percent; word beginnings--disjoined, 10, 0.46 percent; word beginnings--joined, 158, 7.34 percent; word endings--disjoined, 69; 3.21 percent; word endings--joined, 167, 7.76 percent; miscellaneous, 1, 0.05 percent; joinings, 1,094, 50.84 percent, auxiliary, 4, 0.19 percent; and undeclareds, 353, 16.40 percent.

In SW Century 21 shorthand, 1,630 decision points were required to write the first 1,000 words with principles beyond the basic shorthand alphabet. These 1,630 decision points are distributed within the system accordingly: bends and blends, 144, 8.83 percent; consonants, 1, 0.06 percent; vowels, 123, 7.55 percent; word beginnings--disjoined, 10, 0.61 percent; word beginnings--joined, 84, 5.15 percent; word endings--disjoined, 167, 10.25 percent; word endings--joined, 60, 3.68 percent; miscellaneous, 4, 0.25 percent; joinings, 761, 46.69 percent; auxiliary, 7, 0.43 percent; and undeclareds, 269, 16.50 percent.

The chi-square test was applied to determine if significant differences exist between the systems in the use of principle groupings in writing the first 1,000 words in shorthand. The resulting χ^2 value of 146.885 is significant beyond the .001 level. The disjoined and joined word endings represent the greatest differences in the determination of the χ^2 value. The vowels, consonants, and joined word beginnings also indicate substantial differences.

The following paragraphs are devoted to an analysis of the differences between the systems based upon the frequencies of the individual principles summarized within the theory categories of Table 5.5. The function of the analysis is to determine which principles contribute to the differences between the systems and which principles add substantially to the memory loads of the two systems. Table E.1 (Gregg) and E.2 (South-Western) in Appendix E reflect the detailed frequencies summarized in Table 5.5. The categories are presented as they are listed in Table 5.5.

1. Bends and Blends. Gregg DJ blends account for 178 frequencies within the first 1,000 words compared with 144 frequencies of the South-Western bends and blends. The most used principles in both systems are the nt, nd of Gregg (57 occurrences) and the nd, nt, nv bend of South-Western (47 occurrences). Even though the South-Western principle is expanded to include the nv bend, the influence of the -ed word ending reduces the overall frequency of this principle compared with Gregg. The ded, det, ted principle (24 occurrences) of Gregg compared with the dd, dt, td principle (5 occurrences) mirrors even greater impact of the South-Western -ed principle.

2. Consonants. Few consonant principles occur in either system beyond the basic alphabetic presentations of the shorthand strokes. The four consonant principles of Gregg produce 24 decision points compared to the one consonant decision point occurring in South-Western. Provisions for w account for 19 of the 24 Gregg frequencies. South-Western has a basic alphabetic stroke assigned to w.

3. Vowels. Eight vowels were identified for Gregg and nine for South-Western. The use of vowel principles is more evenly divided in Gregg than in South-Western. The short i sound (body of words) principle in South-Western accounts for 78.86 percent (97 of 123) of the textually declared vowel principle decisions made in the South-Western system in writing the first 1,000 Mellinger words.

4. Word Beginnings--Disjoined. Disjoined word beginnings account for 10 frequencies in each of the systems.

5. Word Beginnings--Joined. The Gregg joined word beginning principles account for 158 decision points in writing the first 1,000

Mellinger words compared with 84 for South-Western. The larger number of decision points in Gregg is based primarily on the following: the com-,con- principles represented by k before a consonant (24 occurrences); the re- principle represented by r before downstrokes and vowels (31 occurrences); and the em-, en-, un- represented by m or n before a consonant (7 of the 26 combined occurrences--obtained from the SAS listing.) South-Western eliminates decisions in these areas by using the com-, con-, re-, em-, en-, and un- word beginnings alphabetically. These three groups of Gregg principles account for 62 of the 74 frequency differences in this category.

6. Word Endings--Disjoined. The 22 disjoined word endings of South-Western totaling 167 occurrences within the first 1,000 words compare with Gregg's 14 listed word endings totaling 69 occurrences. The major portion of the 98 additional South-Western frequencies occurs in the use of the -ed word ending (71 occurrences). The other principles contribute to a lesser degree: -casion, -cation, 5; -cher, -ture, 5; -er, -or, 5; -ive, -sive, -tive, 4; -ety, -ity, 3; and -ous, -us, 2. The -ing principle is the most frequently used in Gregg (55 occurrences) and the second most frequently used in South-Western (56 occurrences). The one frequency difference is attributable to the word during as a brief form in Gregg ( ) and the use of the disjoined word ending in South-Western ( ).

7. Word Endings--Joined. Twenty-four joined word endings were identified in Gregg DJ representing 167 occurrences within the first 1,000 words. Fourteen were identified in SW Century 21 representing 60 occurrences. The -tion ending with its varied spellings represented by

the sh stroke accounts for 59 of the 107 differences in occurrences. In South-Western, the -tion ending is an alphabetic combination of sh-n. Other endings contributing to this difference in the Gregg system include: -ual, 9; -ure, 7; -ly, 7 differences between the SW occurrences; -tain, 6; -ern, -erm, 5; -tial, -cial, 5; -ort, 4; and -quire, 4. The difference in frequencies of the -ly ending in Gregg (28 occurrences) and South-Western (21 occurrences) is basically explained by the South-Western principle of expressing only the e in -ly when the l sound is heard at the end of a root word (5 occurrences).

8. Miscellaneous. The miscellaneous shorthand principles utilized in both systems within the first 1,000 most frequently used words are minimal with Gregg DJ having one frequency utilizing one principle and South-Western having four frequencies utilizing two principles.

9. Joinings. The joining category represents the greatest frequencies in each system. In Gregg DJ, of the 2,152 decisions made beyond the basic alphabet in constructing words containing principles, 1,094, 50.84 percent, of the decisions involve joining principles. In SW Century 21, of the 1,630 decisions made beyond the basic alphabet in constructing words containing principles, 761, 46.69 percent, of the decisions involve joining principles.

Of the 1,094 Gregg joining principles, 674, 61.61 percent, involve the writing of circle vowels (Nos. 901-903). A frequency of 348, 31.81 percent, of the decisions involve the choice of left s or comma s (Nos. 913-918). Twenty-three, 2.10 percent, of the decision points involve the placement of the word on the line of writing when s precedes a downstroke (No. 912). Other principles with smaller frequencies include the

o-hook before n, m (No. 909, 13 occurrences); the oo-hook after n, m (No. 910, 12 occurrences); joining of oo-s without an angle (No. 911, 8 occurrences); and the joining of under th to o, r, l (No. 919, 9 occurrences).

Of the 761 South-Western joining decision, 601, 78.98 percent involve decisions regarding writing of circle vowels (Nos. 906, 909, 911). Ninety-eight, 12.88 percent, of the joining decisions involved placement on the line of writing when a beginning vowel precedes a downstroke consonant (No. 904). The writing of u after a horizontal stroke occurs 27 times, or 3.55 percent (No. 903). Other principles with smaller frequencies include: the s stroke distinguished in all joinings (No. 910, 13 occurrences); jog (No. 902, 11 occurrences); and writing e in -ly (No. 908, 5 occurrences).

Thus, in both systems, the major portion of the joining decisions involve the writing of circle vowels: Gregg 61.61 percent (674 occurrences); South-Western 78.98 percent (601 occurrences). Decisions concerning the line placement of outlines in South-Western involve 12.88 percent, (98 occurrences) of the joining decision in South-Western and 2.10 percent (23 occurrences) in Gregg. Within the textually declared joining principles, the joining of left s or comma s in the Gregg system involves 348 occurrences, 31.81 percent, of the joining frequencies. Other principles in each system with lower frequencies complete the joining category.

10. Auxiliary. The nonshorthand elements in each system are minimal within the first 1,000 words. Four occur in Gregg and seven in South-Western. The use of contractions in both systems account for the greatest frequencies of nonshorthand elements.

11. Textually Undeclared. Of the 353 textually undeclared decision points determined for Gregg DJ in writing the first 1,000 words, 204, 57.79 percent, involve undeclared joining principles. Eighty-one, 39.71 percent, of the 204 undeclared joining decision points involve decisions regarding the choice of joining dual characters (Nos. 064-071). Eighty-seven, 24.65 percent, of the 353 undeclared decision points involve vowel usage. Therefore, undeclared vowel and joining decisions constitute 82.44 percent (291 of 353) of the undeclared decisions made by the shorthand writer of Gregg DJ. These decisions account for 13.52 percent of the total decisions (291 of 2,152) made in writing the first 1,000 most frequently used Mellinger words by principles. Finally, the blends category of textually undeclared principles accounts for an additional 57 decision points in the system in writing the first 1,000 words, which amounts to 1.61 percent (57 of 353) of the textually undeclared principles. Forty-six of these 57 decision points involve using blends in derivatives.

Of the 269 textually undeclared decision points determined for SW Century 21 in writing the first 1,000 words, 170, 63.20 percent, involve joining decisions. Of these 170, 116, 68.24 percent, involve decisions on the writing and placement of circle vowels (Rules Nos. 061, 068, 069, 070, 071). These decisions account for 7.12 percent of the SW Century 21 decisions (116 of 1,630) in writing the first 1,000 most frequently used words by shorthand principles.

In addition to the joining decisions, two other principles partly account for the major portion of the South-Western textually undeclared

principles: No. 051 -ed taking precedence over other strokes and principles (71 occurrences) and No. 031 short i written in outline as a transcription aid (10 occurrences).

To summarize the differences between the systems in terms of the decision points used at the principles level, the major differences in the frequencies of the theory categories are described briefly in the following paragraphs.

Within the bends and blends category, the use of the -ed word ending of South-Western reduces the frequencies of bends and blends and adds additional decision points to the disjoined word endings of South-Western. Within the consonant category, Gregg DJ employs principles to write the w sound that are not needed in the South-Western system as the w is assigned a primary alphabetic stroke. The textually declared vowel category indicates a higher frequency for South-Western because of the use of the short i principle. The disjoined word beginnings reflect little difference between the systems. The frequency of the joined word beginnings, however, indicate that the decisions required to construct dictionary-correct outlines using the com-, con-, re-, em-, en-, un- principles add substantially to the frequencies of the joined word beginnings in Gregg DJ. The greater frequency of the disjoined word endings in SW Century 21 is due primarily to the -ed word ending, even though 22 endings were identified for South-Western compared with 14 for Gregg. With the joined word endings, more principles were identified for Gregg DJ than SW Century 21. The Gregg -tion produces the greatest frequencies within the first 1,000 words. South-Western combines primary alphabetic strokes to achieve this ending. In addition to the -tion ending, several unique principles of

smaller frequencies occur to round out the differences between the two systems in this category. Both the miscellaneous and auxiliary categories did not accumulate large frequencies in either system for the first 1,000 words. The biggest difference in frequencies occurs in the joining category with Gregg totaling 1,094 and South-Western totaling 761 textual joinings. The bulk of the frequencies for both systems concern the writing of circle vowels: Gregg 674, South-Western 601. Ninety-eight of the South-Western outlines and 23 of the Gregg outlines involve line of writing placement decisions beyond the general placement rules of the systems. These two areas of joining principles account for 63.71 percent of the Gregg and 91.85 percent of the South-Western textually declared decisions found in the first 1,000 words. In addition, 348, 31.81 percent, joining decisions are required for the choice between comma s and left s.

With the addition of the textually undeclared decision points, the impact of the joining decisions becomes clearer. Of the 2,152 Gregg decision points, 775, 36.01 percent, involve writing circle vowels (including Nos. 073 and 079). Of the 1,630 South-Western decision points, 717, 43.99 percent, involve writing circle vowels (including Nos. 061, 068, 069, 070, 071).

Eighteen textually undeclared vowel principles were identified in Gregg DJ necessary to the construction of dictionary-correct outlines. These 18 principles produced 87 frequencies within the first 1,000 words, 4.04 percent of the total decision points. The textually declared (348 occurrences, Nos. 913-918) and textually undeclared (81 occurrences, Nos. 064-071) principles regarding the joining of comma s and left s

account for 429, 19.93 percent, of the total 2,152 decision points. By subtracting the 429 decision points to select comma s or left s and the additional 87 decision points for writing vowels within the Gregg system from the total declared and undeclared decision points (2,152 minus 516 equaling 1,636), the number of decision points required in both systems to write the 1,000 most frequently used words becomes similar: Gregg, 1636, compared with South-Western, 1630. Therefore, the decisions the Gregg writer must make regarding the left s and comma s add nearly 20 percent (19.93 percent) to the decision points at the principles level.

Syllabic intensity. The average syllabic intensity of Gregg DJ and SW Century 21 principles in writing the first 1,000 Mellinger words is presented in Table 5.6 by cumulative word groups. The overall syllabic intensity increases in both systems as more words of fewer frequency are added. At the 10-word group, the syllabic intensity for Gregg and South-Western is 1.0; at the 100-word group, it increases to 1.626 for Gregg and 1.574 for South-Western; at the 500-word group, the syllabic intensity Gregg is 2.206 and for South-Western, 2.196. At the 1,000-word group, the overall syllabic intensity for all categories is 2.346 for Gregg and 2.320 for South-Western. No significant difference occurs at the 1,000-word group for the overall syllabic intensity of the words (t value = 0.787). The difference between the average syllabic intensity of two categories proved significant, however. The words in the blends category and the word endings--joined category of Gregg have greater syllabic intensity than the South-Western words in those categories.

Table 5.6. Average Syllabic Intensity of Gregg DJ and SW Century 21 Principles in the First 1,000 Mellinger Words[a] by Theory Category and Cumulative Word Groupings

Theory Category[b]	Cumulative Word Groupings												Standard Deviation	t value
	10	50	100	200	300	400	500	600	700	800	900	1000		
Bends & Blends														
Gregg	1.000	1.000	1.333	1.928	2.121	2.192	2.257	2.186	2.212	2.263	2.276	2.264	0.958	2.260[c]
South-Western	1.000	1.000	1.800	1.692	1.893	1.767	1.875	1.903	2.011	2.088	2.060	2.028	0.900	
Consonants														
Gregg	1.000	1.000	1.000	1.000	1.000	1.692	1.643	1.600	1.611	1.579	1.565	1.542	0.932	--[d]
South-Western	--	--	--	--	--	--	--	--	3.000	3.000	3.000	3.000	0.000	
Vowels														
Gregg	--	1.000	1.714	2.000	1.917	2.091	2.073	2.128	2.155	2.180	2.241	2.202	1.132	-0.183
South-Western	--	1.000	1.667	1.636	2.000	2.069	2.122	2.132	2.177	2.181	2.183	2.228	0.838	
Word Beg.--Disj.														
Gregg	--	--	--	3.500	3.500	3.500	3.333	3.333	3.333	3.333	3.143	3.200	1.033	0.000
South-Western	--	--	--	2.750	2.750	2.750	2.800	2.800	3.000	3.000	3.000	3.200	1.033	
Word Beg.--Joined														
Gregg	--	--	3.333	2.286	2.357	2.468	2.515	2.512	2.530	2.559	2.604	2.601	0.844	0.578
South-Western	--	--	1.500	1.900	2.077	2.360	2.500	2.465	2.481	2.475	2.560	2.536	0.828	
Word End.--Disj.														
Gregg	--	--	1.500	2.000	2.200	2.348	2.345	2.526	2.562	2.534	2.554	2.580	0.914	-0.008
South-Western	--	--	1.500	2.091	2.286	2.525	2.442	2.500	2.500	2.519	2.568	2.581	0.953	
Word End.--Joined														
Gregg	--	3.000	2.600	2.647	2.760	2.886	2.940	2.976	2.951	3.000	3.014	3.030	0.928	2.090[c]
South-Western	--	--	2.000	2.375	2.444	2.562	2.583	2.636	2.611	2.641	2.706	2.750	0.773	
Miscellaneous														
Gregg	--	--	--	--	--	--	--	4.000	4.000	4.000	4.000	4.000	0.000	--[d]
South-Western	--	--	1.000	1.000	1.000	2.000	2.000	2.500	2.500	2.500	2.500	2.500	1.291	
Joinings														
Gregg	1.000	1.190	1.472	1.615	1.711	1.967	2.045	2.124	2.127	2.158	2.197	2.207	1.034	-0.327
South-Western	1.000	1.222	1.559	1.732	1.783	2.034	2.076	2.127	2.155	2.189	2.223	2.223	1.027	
Auxiliary														
Gregg	--	--	--	--	--	1.000	1.000	2.500	2.000	2.000	1.750	1.750	1.500	0.405
South-Western	--	--	--	--	1.000	1.000	1.000	1.750	1.600	1.600	1.428	1.428	1.134	
Undeclared														
Gregg	--	1.500	1.625	1.920	1.981	2.236	2.272	2.316	2.319	2.361	2.404	2.405	0.946	-0.627
South-Western	--	1.000	1.286	2.040	2.190	2.537	2.465	2.346	2.358	2.428	2.480	2.453	0.967	
Total														
Gregg	1.000	1.258	1.626	1.823	1.899	2.141	2.206	2.264	2.272	2.301	2.338	2.346	1.024	0.787
South-Western	1.000	1.125	1.574	1.844	1.941	2.164	2.196	2.220	2.250	2.288	2.320	2.320	0.986	

[a] Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b] If two or more principles were used in forming a word, the word was counted in each principle.

[c] Significant at .05 level.

[d] The t value was not calculated.

Stroke count. The average stroke counts in Gregg DJ and SW Century 21 principles in writing the first 1,000 Mellinger words are presented in Table 5.7 by cumulative word groups. As with the syllabic intensity, the average stroke count for the theory categories in each system increases as the word-unit groups expand from the 10 most frequently used words to the 1,000 most frequently used words. The average stroke count per word of those words using principles increase: 1.667 for Gregg DJ and 1.333 for South-Western in the 10-word group; 3.205 for Gregg and 2.656 for South-Western at the 100-word group; 4.380 for Gregg and 3.986 for South-Western at the 500-word group; and 4.705 for Gregg and 4.452 for South-Western at the 1,000-word group. The average stroke count difference between the systems at the 1,000-word group is statistically significant beyond the .001 level (t value = 5.153).

Three of the 11 average stroke count differences of the theory categories are statistically significant for the first 1,000 words. The bends and blends average stroke count of 4.168 per word in Gregg DJ and 3.764 per word in SW Century 21 is significant (t value = 2.479). The Gregg 4.904 average stroke count for joined word endings compared with the South-Western 4.133 average stroke count is significant beyond the .001 level (t value = 3.301). The average stroke count per word of those words using joining principles is 4.697 for Gregg and 4.377 for South-Western. This difference is significant beyond the .001 level (t value = 4.545). Thus, in two theory categories, joined word endings and joinings, less than one chance in 1,000 exists that the Gregg DJ average stroke count is less than that of SW Century 21.

Table 5.7. Average Shorthand Strokes of Gregg DJ and SW Century 21 Principles in the First 1,000 Mellinger Words[a] by Theory Category and Cumulative Word Groupings

Theory Category[b]	Cumulative Word Groupings												Standard Deviation	t value
	10	50	100	200	300	400	500	600	700	800	900	1000		
Bends & Blends														
Gregg	1.000	1.000	1.333	3.000	3.333	3.731	3.871	3.814	3.949	4.040	4.147	4.168	1.440	2.479[c]
South-Western	1.000	1.000	1.400	2.077	2.643	2.860	3.125	3.250	3.461	3.690	3.788	3.764	1.477	
Consonants														
Gregg	2.000	2.000	2.000	2.250	2.875	4.154	4.143	4.200	4.056	4.053	4.261	4.208	1.841	--[d]
South-Western	--	--	--	--	--	--	--	--	5.000	5.000	5.000	5.000	0.000	
Vowels														
Gregg	--	3.000	2.714	3.688	3.667	4.030	4.171	4.276	4.310	4.375	4.626	4.596	1.868	1.618
South-Western	--	2.000	3.000	2.909	3.385	3.586	3.732	3.774	3.937	4.064	4.156	4.228	1.342	
Word Beg.--Disj.														
Gregg	--	--	--	4.000	4.000	4.000	4.333	4.333	5.167	5.167	5.143	5.000	1.414	1.647
South-Western	--	--	--	2.500	2.500	2.500	2.800	2.800	3.500	3.500	3.500	3.700	2.057	
Word Beg.--Joined														
Gregg	--	--	3.667	3.928	4.107	4.404	4.576	4.646	4.640	4.670	4.762	4.778	1.324	1.120
South-Western	--	--	2.500	2.900	3.538	4.120	4.210	4.326	4.308	4.410	4.547	4.571	1.450	
Word End.--Disj.														
Gregg	--	--	4.000	4.400	4.700	4.826	4.862	5.105	5.125	5.190	5.231	5.246	1.265	-0.290
South-Western	--	--	3.500	4.545	4.667	4.975	5.038	5.218	5.279	5.321	5.358	5.299	1.282	
Word End.--Joined														
Gregg	--	7.000	4.000	4.059	4.240	4.568	4.776	4.774	4.706	4.784	4.870	4.904	1.599	3.301[e]
South-Western	--	--	3.500	3.500	3.556	3.750	3.917	3.788	3.778	3.949	4.118	4.133	1.408	
Miscellaneous														
Gregg	--	--	--	--	--	--	--	7.000	7.000	7.000	7,000	7.000	0.000	--[d]
South-Western	--	--	2.000	2.000	2.000	2.500	2.000	2.750	2.750	2.750	2.750	2.750	1.708	
Joinings														
Gregg	2.000	2.857	3.151	3.541	3.814	4.166	4.323	4.435	4.494	4.579	4.660	4.697	1.514	4.545[f]
South-Western	2.000	2.222	2.706	3.165	3.466	3.820	3.972	4.080	4.163	4.262	4.341	4.377	1.452	
Auxiliary														
Gregg	--	--	--	--	--	4.000	4.000	5.500	5.000	5.000	4.750	4.750	1.500	0.845
South-Western	--	--	--	--	--	2.000	3.000	3.500	3.600	3.600	3.857	3.857	1.773	
Undeclared														
Gregg	--	3.250	4.125	3.840	4.167	4.484	4.537	4.603	4.655	4.718	4.780	4.819	1.411	0.951
South-Western	--	2.333	2.428	3.480	3.690	4.179	4.152	4.272	4.442	4.638	4.740	4.706	1.521	
Total														
Gregg	1.667	2.871	3.205	3.612	3.862	4.237	4.380	4.468	4.514	4.585	4.673	4.705	1.510	5.153[f]
South-Western	1.333	2.000	2.656	3.178	3.474	3.853	3.986	4.111	4.224	4.356	4.440	4.452	1.492	

[a] Morris Mellinger, The Basic Vocabulary for Written Business Office Communications, (Chicago: Chicago State College Publications Office, 1970).

[b] If two or more principles were used in forming a word, the word was counted in each principle.

[c] Significant at .05 level.

[d] The t value was not calculated.

[e] Significant at the .01 level.

[f] Significant beyond .001 level.

Syllabic Intensity and Stroke Count

The syllabic intensity and average stroke counts of Gregg DJ and SW Century 21 in writing Mellinger's first 100 words are presented in Table 5.8, for the first 500 words in Table 5.9, and for the first 1,000 words in Table 5.10. At each syllabic intensity level, the words are categorized by the strokes required to write the outlines in shorthand. Whereas the average stroke count tables presented earlier reflect the methods of writing or the theory category differences, these tables concentrate on the word itself.

The majority of the words in the first 100 most frequently used words, as shown in Table 5.8, is of one syllable (77 out of 100). These one-syllable words require an average of 1.870 shorthand strokes to write the outlines in Gregg DJ and 1.779 shorthand strokes in SW Century 21. The 18 two-syllable words require an average of 3.222 shorthand strokes in Gregg and 2.833 shorthand strokes in South-Western. The 4 three-syllable words average 4.250 strokes per word for Gregg and 3.750 for South-Western. Only one word in the first 100 words is a four-syllable word--information (No. 54). The one-syllable word first (No. 96) requires five shorthand strokes in Gregg DJ. Of the three-syllable words, sincerely (No. 50) requires seven shorthand strokes in Gregg DJ and three in SW Century 21 as it is a correspondence form. The *t* values calculated on the average shorthand strokes indicate no significant difference in writing the words in shorthand at the first 100-word level.

The majority of the first 500 most frequently used words, as shown in Table 5.9, is one syllable (236 of 500). The 236 one-syllable words require an average of 2.686 shorthand strokes in Gregg DJ shorthand and

Table 5.8. Syllabic Intensity and Stroke Count of Gregg DJ and SW Century 21 Shorthand in Writing the First 100 Mellinger Words[a]

Syllabic Intensity	Stroke Count 1	2	3	4	5	6	7	Total Words	Total Strokes	Average Strokes	Standard Deviation	t Value[b]
1												
G	27	37	10	2	1	-	-	77	144	1.870	0.833	0.718
SW	30	34	13	-	-	-	-		137	1.779	0.719	
2												
G	-	7	4	4	2	1	-	18	58	3.222	1.263	1.030
SW	-	9	4	4	1	-	-		51	2.833	0.985	
3												
G	-	1	1	-	1	-	1	4	17	4.250	2.217	0.414
SW	-	-	2	1	1	-	-		15	3.750	0.957	
4												
G	-	-	-	1	-	-	-	1	4	4.000	--	--[c]
SW	-	1	-	-	-	-	-		2	2.000		
TOTAL												
G	27	45	15	7	4	1	1	100	223	2.230	1.196	1.182
SW	30	44	19	5	2	-	-		205	2.050	0.936	

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Not significant at the .05 level.

[c]Inadequate observations to calculate t value.

Table 5.9. Syllabic Intensity and Stroke Count of Gregg DJ and SW Century 21 Shorthand in Writing the First 500 Mellinger Words[a]

Syllabic Intensity	Stroke Count										Total Words	Total Strokes	Average Strokes	Standard Deviation	t Value
	0	1	2	3	4	5	6	7	8	9					
1															
G	-	33	68	81	48	6	-	-	-	-	236	634	2.686	1.029	1.011
SW	1[b]	41	64	84	40	6	-	-	-	-		611	2.589	1.054	
2															
G	-	2	24	30	47	39	13	1	2	-	158	624	3.949	1.204	2.469[c]
SW	-	4	30	37	51	28	6	1	1	-		570	3.608	1.251	
3															
G	-	-	4	13	10	21	17	13	-	-	78	385	4.936	1.471	1.370
SW	-	-	5	12	20	20	15	4	2	-		360	4.615	1.398	
4															
G	-	-	-	1	3	6	4	3	1	1	19	107	5.632	1.499	1.885
SW	-	-	2	3	3	5	3	3	-	-		89	4.684	1.600	
5															
G	-	-	-	1	1	2	-	2	1	2	9	57	6.333	2.179	1.861
SW	-	-	2	2	1	-	3	-	1	-		40	4.444	2.128	
TOTAL															
G	-	35	96	126	109	74	34	19	4	3	500	1807	3.614	1.565	2.868[d]
SW	1	45	103	138	115	59	27	8	4	-		1670	3.340	1.455	

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Word No. 235 three contains no shorthand characters in SW Century 21 shorthand.

[c]Significant at .05 level.

[d]Significant at .01 level.

Table 5.10. Syllabic Intensity and Stroke Count of Gregg DJ and SW Century 21 Shorthand in Writing the First 1,000 Mellinger Words[a]

Syllabic Intensity		Stroke Count											Total Words	Total Strokes	Average Strokes	Standard Deviation	t Value
		0	1	2	3	4	5	6	7	8	9	10					
1																	
	G	–	34	85	130	89	20	–	–	–	–	–	358	1050	2.933	1.043	0.740
	SW	1[b]	42	81	135	76	22	1	–	–	–	–		1029	2.874	1.092	
2																	
	G	–	2	31	70	107	105	41	8	4	–	–	368	1561	4.242	1.274	2.352[c]
	SW	–	4	38	82	117	91	25	7	4	–	–		1480	4.022	1.266	
3																	
	G	–	–	8	25	32	49	49	33	3	–	–	199	1013	5.090	1.440	1.681
	SW	–	–	9	21	52	52	42	19	4	–	–		966	4.854	1.361	
4																	
	G	–	–	–	5	5	8	10	18	3	1	1	51	304	5.961	1.599	2.029[c]
	SW	–	–	4	6	6	12	7	11	5	–	–		269	5.274	1.718	
5																	
	G	–	–	–	2	3	4	2	5	1	5	–	22	138	6.273	2.028	1.064
	SW	–	–	2	3	2	3	4	4	2	1	1		123	5.591	2.218	
6																	
	G	–	–	–	–	–	1[d]	–	–	–	–	–	1	5	5.000	--	--[e]
	SW	–	–	–	–	1[d]	–	–	–	–	–	–		4	4.000	--	
TOTAL																	
	G	–	36	124	232	236	187	102	64	11	6	1	999[f]	4071	4.075	1.608	2.831[g]
	SW	1	46	134	247	254	180	79	41	15	1	1		3872	3.876	1.536	

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Word No. 235 three contains no shorthand characters in SW Century 21 shorthand.

[c]Significant at .05 level.

[d]Word No. 526 responsibility.

[e]Inadequate observations to calculate t value.

[f]Second occurrence of word club (No. 816) deleted.

[g]Significant at .01 level.

2.589 in SW Century 21 shorthand; the 158 two-syllable words require an average of 3.949 strokes in Gregg and 3.608 in South-Western. The average stroke count continues to increase as the syllabic intensity increases. The one-syllable word with zero shorthand-countable strokes in South-Western is the word three (No. 235). Three is written without shorthand characters in SW Century 21.

The differences between the overall average stroke count of the two systems for the first 500 words is significant at the .01 level (t = 2.868). Thus, on the average, the stroke count in writing the first 500 words in Gregg DJ is higher than writing the outlines in SW Century 21 shorthand. The average stroke count for the one-syllable words, however, does not reflect a significant difference.

The syllabic intensity and stroke counts in writing the first 1,000 words, as indicated in Table 5.10, indicate a shift from one-syllable words to two-syllable words representing the larger portion of words. Whereas 122 one-syllable words were added from the 500- to the 1,000-word level, 210 two-syllable words were added. The difference between the means of 2.933 average shorthand strokes to write one-syllable words in Gregg and the 2.874 average strokes in South-Western is not statistically significant. The one-syllable words at the 100-, 500-, and 1,000-word groups reflect no significant difference in the average strokes per word in each system.

The difference between the means in writing the first 1,000 words in Gregg DJ (4.075 average shorthand strokes) and SW Century 21 (3.876 average shorthand strokes) is significant at the .01 level (t = 2.831).

Thereby, one chance in a hundred exists that the Gregg DJ average stroke count is less than the SW Century 21 average stroke count in writing the first 1,000 Mellinger words.

In the 1,000 words, the word responsibility (No. 526) has six syllables. Both systems contain words requiring ten shorthand strokes: Gregg, appropriate (No. 690); and South-Western, recommendations (No. 874).

The average stroke count differences in the 100-word group reflect the lower stroke counts used by Gregg in writing memory form words. In the first 100 words, 55 memory words are used in both systems. By the 500-word group, the use of memory forms in Gregg is 129 compared with 180 in South-Western; and in the 1,000-word group, Gregg has 198 memory words to South-Western's 304. Thus, even though the memory words as a whole are written with significantly fewer shorthand strokes in Gregg (t value 2.998 significant at .01 level), the influence of the memory forms drops as the cumulative word units increase. By the accumulation of 1,000 words, the advantage of smaller strokes in Gregg memory words is overridden.

Weighted Mellinger Frequency

Mellinger's first 100, 500, and 1,000 words with weighted frequencies and percentages by the methods of writing and the theory categories for Gregg DJ are presented in Table 5.11 and for SW Century 21 in Table 5.12. Appendix E, Tables E.3 and E.4, detail the principles within the theory categories by assigned computer numbers.

If all words on the Mellinger list were added by their frequencies of occurrences and converted to percentages, each percentage would represent the proportion of a word's occurrence in written business office communications as determined by Mellinger. A weighted frequency was calculated for the words as written in shorthand in each system. The weighted frequency was obtained by summing the Mellinger frequency count for each word by the methods of writing and/or principles used in constructing the shorthand outline for the word. If two methods of writing and/or two or more principles were used in constructing the shorthand outline, the Mellinger frequency was added to each of the methods of writing and/or the shorthand principles involved. The function of the weighted percentage is to reflect the proportion of occurrence of methods of writing and principles that would be found in writing the first 100, 500, and 1,000 most frequently used in written business office communications. Further, as the weighted percentages reflect the proportion of use for each system as identified by the methods of writing and principles used, the percentages formulate a model for the development of shorthand copy.

The Gregg DJ words, weighted frequencies, and percentages are summarized in Table 5.11. The Gregg alphabetic words represent 15.01 percent of the weighted frequencies within the first 100 most frequently used words; and by the first 1,000 words, they represent 14.38 percent. Abbreviated words do not occur in Gregg DJ in the first 100 words; and in the first 1,000 words, they occupy 0.03 percent of the weighted frequencies. Brief form percentages decrease from 51.74 percent in the first 100 words to 35.27 percent in the first 500 words. They further

Table 5.11. The First 100, 500, 1,000 Mellinger Words[a] with Weighted Frequencies and Percentages in Gregg DJ Shorthand by Methods of Writing and Theory Categories

Methods of Writing and Theory Categories[b]	Words			Mellinger Weighted Frequency of Words			Percent of Mellinger Weighted Frequencies		
	First 100	First 500	First 1,000	First 100	First 500	First 1,000	First 100	First 500	First 1,000
Alphabetic	33	179	342	34,100	53,490	61,199	15.01	15.07	14.38
Abbreviated	-	1	2	--	83	125	--	0.02	0.03
Brief Forms	52	100	121	117,548	125,186	126,224	51.74	35.27	29.66
Brief Form Derivatives	3	29	77	1,727	5,403	7,635	0.76	1.52	1.79
Theory Categories:									
Blends	3	70	178	8,879	16,667	21,970	3.91	4.69	5.17
Consonants	2	14	24	5,009	6,449	6,916	2.21	1.81	1.62
Vowels	7	41	94	3,498	8,003	10,411	1.54	2.25	2.45
Word Beg.--Disj.	-	3	10	--	546	845	--	0.15	0.20
Word Beg.--Joined	3	66	158	1,690	9,288	13,618	0.74	2.63	3.21
Word End.--Disj.	2	29	69	852	3,816	5,777	0.38	1.08	1.34
Word End.--Joined	5	67	167	2,764	9,900	14,452	1.22	2.80	3.41
Miscellaneous	-	-	1	--	--	61	--	--	0.01
Joinings	53	467	1,094	45,821	96,324	125,750	20.16	27.13	29.54
Auxiliary	-	1	4	--	89	242	--	0.03	0.05
Undeclared	8	136	353	5,265	19,666	30,308	2.30	5.54	7.10
TOTAL	171	1,203	2,694	227,153	354,910	425,533	99.97	99.99	99.96

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]If two or more methods of writing or principles were used in forming a word, the word was counted in each category. A breakdown of the theory word categories by computer-coded principle numbers is given in Table E.3., Appendix E.

decrease in the weight of the 1,000 words to 29.66 percent. Brief form derivatives account for only 0.76 percent of the weighted frequencies in the first 100 words; and by the first 1,000 words, they occupy 1.79 percent.

Principles are listed by the theory categories with only the summary figures for each category given in Table 5.11. The individual principles, as listed by their three-digit computer codes, are presented in Appendix E, Table E.3, in the same format as Table 5.11.

The division of principles representing the greatest percentage allotment is the joining category with 29.54 percent of the weighted frequencies in the first 1,000 words. The textually undeclared principles account for 2.30 percent of the proportion of methods of writing and principles used in writing the shorthand outlines of the first 100 words, 5.54 percent of the first 500 words, and 7.10 percent of the first 1,000 words. Blends increase in their proportion of use from 3.91 percent in the first 100 words, to 4.69 percent in the first 500, and to 5.17 percent in the first 1,000 words. None of the remaining categories reflect accumulated percentages of at least 4 percent.

The SW Century 21 words, weighted frequencies, and percentages are given in Table 5.12. Alphabetic words in SW Century 21 employ 19.52 percent of the weighted frequencies of the first 100 words; 18.85 percent of the first 500, and 17.65 percent of the first 1,000 words. Contracted/correspondence forms in South-Western represent 0.79 percent of the weighted percentages of the first 100 words and decrease to 0.60 percent by the first 1,000 words. Speedforms in South-Western, as with the brief forms in Gregg DJ, mirror a larger percentage in the first 100 words and

Table 5.12. The First 100, 500, 1,000 Mellinger Words[a] with Weighted Frequencies and Percentages in SW Century 21 Shorthand by Methods of Writing and Theory Categories

Methods of Writing and Theory Categories[b]	Words			Mellinger Weighted Frequency of Words			Percent of Mellinger Weighted Frequencies		
	First 100	First 500	First 1,000	First 100	First 500	First 1,000	First 100	First 500	First 1,000
Alphabetic	31	175	323	39,510	58,264	65,116	19.52	18.85	17.65
Contracted/Correspondence	2	6	8	1,609	2,104	2,198	0.79	0.68	0.60
Speedforms	51	123	153	107,410	118,391	119,983	53.06	38.31	32.53
Speedform Derivatives	4	57	151	2,201	8,412	12,777	1.09	2.72	3.46
Theory Categories:									
Bends & Blends	5	56	144	14,329	20,346	24,514	7.08	6.58	6.64
Consonants	-	-	1	--	--	48	--	--	0.01
Vowels	6	41	123	5,580	9,714	13,604	2.75	3.14	3.69
Word Beg.--Disj.	-	5	10	--	1,070	1,293	--	0.34	0.35
Word Beg.--Joined	2	38	84	926	5,210	7,315	0.45	1.68	2.00
Word End.--Disj.	2	52	167	891	6,917	12,475	0.44	2.23	3.38
Word End.--Joined	4	24	60	1,933	4,337	6,002	0.96	1.40	1.62
Miscellaneous	1	3	4	345	512	573	0.17	0.17	0.15
Joinings	34	316	761	22,901	57,746	78,665	11.32	18.68	21.32
Auxiliary	-	3	7	--	298	490	--	0.09	0.14
Undeclared	7	99	269	4,797	15,699	23,823	2.37	5.06	6.45
TOTAL	149	998	2,265	202,432	309,020	368,876	100.00	99.93	99.99

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]If two or more methods of writing or principles were used in forming a word, the word was counted in each category. A breakdown of the theory word categories by computer-coded principle numbers is given in Table E.4., Appendix E.

decrease steadily to the first 1,000 words: 53.06 percent in the first 100 words, 38.31 percent in the first 500, to 32.53 percent in the first 1,000. Speedform derivatives, however, increase steadily: 1.09 percent in the first 100, 2.72 percent in the first 500, to 3.46 percent in the first 1,000 words.

Only the summary figures for the theory groups are reported in Table 5.12. The individual principles are listed in Table E.4 of Appendix E. As with Gregg DJ, the joining principles represent the largest weighted frequency proportion: 21.32 percent in the first 1,000 words. The textually undeclared principles account for only 2.37 percent of the first 100 words, 5.06 percent of the first 500, and 6.45 percent of the first 1,000 words. While blends increase in use in Gregg DJ, the percentage of use in SW Century 21 decreases from 7.08 percent in the first 100 to 6.58 percent in the first 500, and back up to 6.64 percent in the first 1,000 words. None of the remaining categories account for more than 4 percent of the weighted frequencies.

The percentages presented at the three word levels represent a model for each word level which reflects the methods of writing and the principles used by each system to translate the Mellinger words into shorthand outlines.

Summary

The first 1,000 Mellinger words were analyzed by the methods of writing and the principles used in converting the high-frequency words into shorthand outlines. The two levels were viewed by frequencies of occcurrence, syllabic intensity, and stroke count. A cross comparison of syllabic intensity and stroke count was made at the 100-, 500-, and

1,000-word level. A model was developed for each system utilizing the Mellinger frequency of each word as translated into the shorthand outline.

The 1,000 words written in SW Century 21 shorthand employ 1,124 methods of writing compared with 1,077 in Gregg DJ shorthand. The chi-square test of independence indicated a significant difference between systems in the use of the methods of writing to translate the first 1,000 Mellinger words into shorthand outlines.

The difference between the methods of writing overall average syllabic intensity per word of the systems is not statistically significant. The syllabic intensity for the Gregg memory method of writing, however, is significantly lower (.01 level). This lower syllabic intensity is reflected in a significantly lower average stroke count in the memory words for Gregg compared with the South-Western average stroke count for memory words (.01 level). However, the overall methods of writing average stroke count for Gregg (4.049) and South-Western (3.883) indicates a significantly lower average stroke count for South-Western (.05 level).

In Gregg DJ, 170 decision-point principles were identified; and in South-Western, 122 principles were identified. The proportion of use between the identified principles and the principles used in writing the first 1,000 words is basically the same for each system. Approximately 28 percent of the principles identified for each system are not used in developing the shorthand outlines for the first 1,000 words. The chi-square test of independence indicated a significant difference between the two systems in the use of the principles to construct the 1,000 words.

The difference in the use of disjoined and joined word endings contribute greatly to the difference between the systems.

In Gregg DJ 2,152 decision points are required to write the 1,000 words at the principles level; 1,630 are required in SW Century 21. Selecting comma s or left s in the construction of Gregg DJ outlines requires 429 decisions, 19.93 percent. These selections represent the largest percentage of decision differences between the two systems.

No significant difference between the average syllabic intensity occurs at the 1,000-word level. The average stroke count difference at the 1,000-word principles level is significant beyond the .001 level (G 4.705; SW 4.452).

To determine the average stroke count of the first 1,000 Mellinger words without considering the methods of writing or the shorthand principles used, the average stroke count per word by syllabic intensity was determined for the 100-, 500-, and 1,000-word groups. In the 100-word group, the difference is not significant. At the 500- and 1,000-word levels, Gregg DJ uses significantly more strokes per word than does SW Century 21.

B. ANALYSIS OF RUNNING SHORTHAND-COUNTABLE WORDS

The purpose of this phase of the study was to observe the differences between the two shorthand systems on the basis of running, or continuous, copy. Letters containing 100-125 words were selected randomly from high school and college typewriting textbooks of the Gregg Division/McGraw-Hill Book Company and the South-Western Publishing Company. The copy was converted to shorthand-countable words, words which employ a shorthand

character in the outline. Nonshorthand words were eliminated. Three thousand shorthand-countable words were keypunched onto data cards. A PL/1 computer program was written to list the words in the 3,000-word running shorthand-countable copy that did not occur in the first 1,000 Mellinger words. The resulting 458 additional words were analyzed following the procedures established for the 1,000-word program. Coding changes were necessary, however, for two-part city names and the dual words, percent and cents. Shorthand outlines for percent and cents may vary when used in conjunction with a figure.

Two levels of analysis are used in discussing the 3,000-word running copy; the methods of writing and the textually declared and undeclared principles. At each level the frequency, syllabic intensity, and stroke count are analyzed. In addition, stroke count is presented as a function of syllabic intensity for the 3,000 running shorthand-countable words.

Methods of Writing

The procedures used in determining methods of writing in the first 1,000 words were used in the running shorthand-countable words. The methods of writing were examined by frequency, average syllabic intensity, and average stroke counts.

Frequency. The methods of writing 3,000 running shorthand-countable words in Gregg DJ and SW Century 21 shorthand are summarized in Table 5.13. In writing the 3,000 running words, 3,162 methods of writing frequencies are used in Gregg DJ compared with 3,226 methods of writing frequencies in South-Western. As the alphabetic, abbreviated/contracted

Table 5.13. Methods of Writing 3,000 Running Shorthand-Countable Words in Gregg DJ and SW Century 21 Shorthand

Methods of Writing[a]	Frequency		Proportion		χ^2 Value	
	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western
Alphabetic	825	953	.2609	.2954	3.448	3.380
Abbreviated/Contracted	4	19	.0013	.0059	4.786	4.687
Memory	1,297	1,134	.4102	.3513	7.293	7.148
Memory Derivative	81	168	.0256	.0521	14.483	14.195
Shorthand Theory Word	955	952	.3020	.2951	0.129	0.127
Total	3,162	3,226	1.0000	1.0000	59.676[b]	

[a]If two methods of writing were used in forming a word, the word was counted in each classification.

[b]A χ^2 value of 18.465 required for 4 degrees of freedom at the .001 level of significance.

words, memory, and memory derivative words are mutually exclusive, no overlap occurs among these methods of writing. Further, an alphabetic word, by definition, cannot have shorthand principles within the word exclusing joining or undeclared principles. The abbreviated/contracted, memory, and memory derivative outlines may also incorporate a shorthand principle in the outline so that two methods of writing may occur in one word.

Memory words comprise the largest proportion of words with 1,297 memory words in Gregg and 1,134 in South-Western. The shorthand theory words account for 955 of the outline construction patterns in Gregg and 952 in South-Western. In Gregg shorthand 825 words are written alphabetically, and in South-Western 953 words are written alphabetically. South-Western's memory derivatives account for 168 methods compared with 81 Gregg derivatives. Nineteen contracted/correspondence forms occur within the 3,000 running words in South-Western, and four abbreviated words occur in Gregg. The memory, memory derivatives, and abbreviated/contracted words in the 3,000 running shorthand-countable copy total 1,321 words in South-Western shorthand and 1,382 words in Gregg.

The chi-square test was applied to determine if the differences between systems in the methods of writing used to construct shorthand outlines for the 3,000 running words are significant. The resulting χ^2 value of 59.676 indicates a significant difference in outline construction patterns between the systems beyond the .001 level of significance. The memory and memory derivative groups account for the major portion of the difference between systems with Gregg using fewer memory derivatives than South-Western and South-Western using fewer memory words than Gregg.

Average syllabic intensity. The average syllabic intensity by methods of writing 3,000 running shorthand-countable words in Gregg DJ and SW Century 21 shorthand is presented in Table 5.14. The difference between the overall average syllabic intensity of Gregg (1.501) and South-Western (1.531) is not statistically significant. Within the different methods of writing, however, significant differences occur. The average Gregg memory syllabic intensity (1.077) compared with the South-Western memory syllabic intensity (1.138) is significantly lower (at the .001 level) than the syllabic intensity of South-Western. With words utilizing shorthand principles, 2.066 average syllabic intensity of South-Western compared with the higher 2.172 average Gregg syllabic intensity is significant.

Stroke count. The average stroke count by methods of writing 3,000 running shorthand-countable words in Gregg DJ and SW Century 21 is summarized in Table 5.15. The overall stroke count average of 2.757 strokes per word in Gregg and 2.708 strokes per word in South-Western is not statistically different. Thus, on the overall average, the difference between the means of 0.49 additional strokes per word in the Gregg outlines is not significant in the stroke counts of the two systems by methods of writing the 3,000 running shorthand-countable words.

The individual methods of writing, however, do present some distinct differences. The average alphabetic stroke count in Gregg of 3.434 per word and 2.915 per word in South-Western is significant beyond the .001 level. The Gregg 1.269 average stroke per memory word compared with the 1.345 average stroke per memory word in South-Western is significant at the .01 level. Likewise, the memory derivative average stroke per word

Table 5.14. Average Syllabic Intensity (S.I.) by Methods of Writing 3,000 Running Shorthand-Countable Words in Gregg DJ and SW Century 21 Shorthand

Methods of Writing[a]	Gregg Average S.I.	South-Western Average S.I.	Gregg Standard Deviation	South-Western Standard Deviation	t Value
Alphabetic	1.300	1.253	0.544	0.599	1.817
Abbreviated/Contracted	3.000	2.737	0.000	0.991	0.521
Memory	1.077	1.138	0.362	0.493	-3.457[b]
Memory Derivative	2.346	2.589	1.039	1.046	-1.726
Shorthand Theory Word	2.172	2.066	1.039	0.995	2.265[c]
Overall Average	1.501	1.531	0.852	0.872	-1.391

[a]If two methods of writing were used in forming a word, the word was counted in each classification.

[b]Significant at .001 level.

[c]Significant at .05 level.

Table 5.15. Average Stroke Count by Methods of Writing 3,000 Running Shorthand-Countable Words in Gregg DJ and SW Century 21 Shorthand

Methods of Writing[a]	Gregg Average Stroke Count	South-Western Average Stroke Count	Gregg Standard Deviation	South-Western Standard Deviation	$\underline{t}$ Value
Alphabetic	3.434	2.915	1.468	1.510	7.320[b]
Abbreviated/Contracted	4.000	3.526	0.817	2.010	0.456
Memory	1.269	1.345	0.552	0.650	-3.074[c]
Memory Derivative	3.630	4.321	1.427	1.190	-3.776[b]
Shorthand Theory Word	4.114	3.822	1.910	2.010	3.249[c]
Overall Average	2.757	2.708	1.856	1.811	1.076

[a]If two methods of writing were used in forming a word, the word was counted in each classification.

[b]Significant beyond the .001 level.

[c]Significant at the .01 level.

for Gregg of 3.630 and 4.321 for South-Western is significantly different beyond the .001 level. Thus, the memory words and memory derivatives in the 3,000 running copy generally required fewer shorthand strokes to complete the outline in the Gregg DJ shorthand than in the SW Century 21 shorthand. With shorthand principles, however, the 4.114 average Gregg strokes per word are significantly higher (at the .01 level) than the 3.822 average strokes per word in writing words containing shorthand principles in South-Western.

Shorthand Principles

The procedures used in the analysis of the principles in the first 1,000 Mellinger words were used in the 3,000 running-copy words. The principles are summarized by: the number of principles listed in each system and used in the 3,000 running words; frequency of the principles; syllabic intensity; and average stroke count of words using principles.

Principles listed and used. In Table 5.16 the principles as identified for Gregg DJ and SW Century 21 shorthand are compared with the use of the principles in writing the 3,000 words. Of the 170 principles identified in the Gregg DJ shorthand, 138, 81.18 percent, are used in constructing outlines in the 3,000 words. Of the 122 identified principles in SW Century 21 shorthand, 99, 81.15 percent, are used. A test of the Significance of Difference Between Proportions resulted in a T value of .0061. Nearly 19 percent (G 18.82 percent; SW 18.85 percent) of the principles in both systems are not used in writing the 3,000 words. This percentage compares to the 28 percent (G 28.24 percent; SW 28.69 percent) of the 1,000 words phase (Table 5.4, page 182).

Table 5.16. Principles Listed and Used in Writing 3,000 Running Shorthand-Countable Words in Gregg DJ and SW Century 21 Shorthand by Theory Category

Theory Category[a]	Gregg Principles		South-Western Principles	
	Listed	Used	Listed	Used
Bends & Blends	11	11	9	8
Consonants	4	3	1	1
Vowels	8	8	9	5
Word Beg.--Disj.	10	6	8	6
Word Beg.--Joined	18	14	15	11
Word End.--Disj.	14	9	22	18
Word End.--Joined	24	20	14	8
Miscellaneous	8	8	8	8
Joinings	19	17	16	15
Auxiliary	2	1	3	3
Undeclared	52	41	17	16
Total	170*	138	122*	99
p	.8118		.8115	
$p_1 - p_2$	.0003			
T[b]	.0061[c]			

[a]If two or more principles were used in forming a word, the word was counted in each principle.

[b]Significance of a Difference Between Proportions

[c]T value of 1.960 required for .05 level of significance.

*Only those principles determined to contain decision points.

Frequency. The frequency of Gregg DJ and SW Century 21 shorthand principles in writing 3,000 running shorthand-countable words is presented in Table 5.17. The use of Gregg principles resulted in 3,726 decision points in the words using principles compared with 2,817 decision points for South-Western, a difference of 909 decision points in writing 3,000 words.

The chi-square test was applied to determine if significant differences exist between the systems in the use of principle groupings in writing 3,000 running shorthand-countable words. The resulting χ^2 value of 316.270 is significant beyond the .001 level of significance indicating that marked differences occur in the use of the principle groupings. The departure from observed proportion and expected proportion is substantial for the bends and blends, consonants, vowels, word endings--disjoined, word endings--joined, and joining groupings.

The greater use of shorthand principles by Gregg occurs in the consonant group (G 136 occurrences; SW 3 occurrences); the word beginnings--joined (G 208; SW 118); word endings--joined (G 218; SW 91); joinings (G 1,957; SW 1,306) and the undeclared principles (G 528; SW 359). The greatest two differences occur in the joining and the undeclared principles.

The following information regarding the frequencies of the individual principles within the 3,000 words was taken from Listing C of the computer printout. Although more consonant principles are listed for Gregg than South-Western, principle No. 202 (w in the beginning of the word) represents 117 occurrences of the frequencies in the consonant category. Within these 117 occurrences, the word we occurred 60 times.

Table 5.17. Gregg DJ and SW Century 21 Shorthand Principles in Writing 3,000 Running Shorthand-Countable Words by Theory Category

Theory Category[a]	Frequency		Proportion		χ^2 Value	
	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western
Bends & Blends	307	344	.0824	.1221	10.952	14.486
Consonants	136	3	.0365	.0011	40.813	53.990
Vowels	138	209	.0370	.0742	17.977	23.776
Word Beg.--Disj.	16	18	.0043	.0064	0.583	0.771
Word Beg.--Joined	208	118	.0558	.0419	2.691	3.559
Word End.--Disj.	122	265	.0327	.0941	43.918	58.088
Word End.--Joined	218	91	.0585	.0323	10.044	13.284
Miscellaneous	35	41	.0094	.0145	1.584	2.095
Joinings	1,957	1,306	.5252	.4636	5.258	6.954
Auxiliary	61	63	.0164	.0224	1.308	1.730
Undeclared	528	359	.1417	.1274	1.037	1.372
Total	3,726	2,817	1.0000	1.0000	316.270[b]	

[a]If two or more principles were used in forming a word, the word was counted in each principle.

[b]A χ^2 value of 29.588 required for 10 degrees of freedom at the .001 level of significance.

More Gregg joined word beginning principles are listed than South-Western joined word beginning principles. However, the use of principle No. 503 com- con- (29 occurrences) and principle No. 512 re- (48 occurrences) account for 77 of the 90 differences in occurrences between the systems. The other differences are spread throughout the remainder of the principles. Within the joined word endings, the -tion (No. 722) principle accounts for 70 occurrences.

Of the 651 differences in frequencies (G 1,957; SW 1,306) of the joining principles, 621 are accounted for by principles Nos. 913-918, which give directions on the joining of the s strokes. Principle No. 919, joining of under th, occurs 12 times. The majority of the joining decisions in both systems is centered around the correct writing of circle vowels: Gregg, 1,198 frequencies (Nos. 901, 902, 903); and South-Western, 1,018 frequencies (Nos. 906, 908, 909, 911).

In Gregg DJ 169 more undeclared principle frequencies occur than in South-Western (G 528; SW 359). The Gregg undeclared vowel frequencies (Nos. 021-038) account for 124 of the undeclared decision points. The undeclared joining principles (Nos. 064-071) giving directions for the joining of the Gregg s strokes account for 174 of the undeclared principle frequencies. Undeclared principle No. 011 (blends used in derivatives if only the first or last letters affected) accounts for 54 of the undeclared frequencies.

The greater use of shorthand principles by South-Western occurs in the blends and blends group (G 307 occurrences; SW 344 occurrences); vowels (G 138; SW 209), and word endings--disjoined (G 122; SW 265). The bends and blends theory point fr (No. 103) accounts for 119 of the

frequencies in this group. The word for which utilizes the fr bend occurs 82 times in the 3,000 words.

The higher frequency of vowel usage in South-Western is embodied primarily in the elimination of the short i in the body of a word (No. 303). This principle occurs 173 times in the 3,000 running words. The larger number of disjoined word ending principles in South-Western accounts for some of the higher South-Western frequency. The major contributor, however, to the higher South-Western frequency is the use of the -ed principle (No. 606), accounting for 102 occurrences.

Syllabic intensity. The average syllabic intensity of the principles in Gregg and South-Western is presented in Table 5.18. The overall syllabic intensity average of the words using principles in the 3,000 running shorthand-countable words is 2.135 for Gregg DJ and 2.148 for SW Century 21. The difference between the means is not statistically significant. Several of the theory categories are statistically significant beyond the .001 level: bends and blends (G 2.036; SW 1.648); consonants (G 1.353; SW 3.000); and joined word endings (G 2.954; SW 2.549).

Stroke count. The average shorthand strokes of words using Gregg DJ and SW Century 21 principles in writing 3,000 running shorthand-countable words is presented in Table 5.19. The overall average of the Gregg strokes per word (4.449) compared with the South-Western average (4.126) is significant beyond the .001 level (t value = 5.039). Thus, less than one chance in a thousand exists that the Gregg average stroke count is less than that of the South-Western average stroke count in writing the 3,000 words.

Table 5.18. Average Syllabic Intensity (S.I.) of Gregg DJ and SW Century 21 Shorthand Principles in Writing 3,000 Running Shorthand-Countable Words by Theory Category

Theory Category[a]	Gregg Average S.I.	South-Western Average S.I.	Gregg Standard Deviation	South-Western Standard Deviation	t Value
Bends & Blends	2.036	1.648	1.030	0.865	5.166[b]
Consonants	1.353	3.000	0.683	1.000	-4.095[b]
Vowels	2.297	2.167	1.270	1.063	0.991
Word Beg.--Disj.	3.250	3.222	0.775	0.732	0.108
Word Beg.--Joined	2.524	2.525	0.780	0.834	-0.015
Word End.--Disj.	2.516	2.551	0.947	1.047	-0.311
Word End.--Joined	2.954	2.549	0.899	0.687	4.290[b]
Miscellaneous	2.457	2.122	0.657	0.812	1.955
Joinings	1.965	2.030	1.006	0.997	-1.820
Auxiliary	2.082	2.048	0.862	0.869	0.221
Undeclared	2.352	2.479	1.026	1.056	-1.785
Overall Average	2.135	2.148	1.038	1.020	-0.503

[a]If two or more principles were used in forming a word, the word was counted in each principle.

[b]Significant beyond the .001 level.

Table 5.19. Average Shorthand Strokes of Gregg DJ and SW Century 21 Shorthand in Writing 3,000 Running Shorthand-Countable Words by Theory Category

Theory Category[a]	Gregg Average Stroke Count	South-Western Average Stroke Count	Gregg Standard Deviation	South-Western Standard Deviation	t Value
Bends & Blends	3.524	2.660	1.858	1.885	5.881[b]
Consonants	3.309	6.000	2.053	1.732	-2.251[c]
Vowels	4.529	4.062	2.114	1.713	2.166[c]
Word Beg.--Disj.	5.000	4.667	1.033	2.114	0.595
Word Beg.--Joined	4.990	4.559	1.421	1.737	2.295[c]
Word End.--Disj.	5.221	5.562	1.446	1.496	-2.105[c]
Word End.--Joined	4.954	4.165	1.657	1.157	4.777[b]
Miscellaneous	3.086	2.512	1.502	1.306	1.780
Joinings	4.405	4.218	1.825	1.712	2.967[d]
Auxiliary	4.098	4.032	1.748	1.796	0.210
Undeclared	4.939	4.886	1.703	1.708	0.459
Overall Average	4.449	4.216	1.844	1.860	5.039[b]

[a]If two or more principles were used in forming a word, the word was counted in each principle.

[b]Significant beyond the .001 level (3.291 required).

[c]Significant at the .05 level.

[d]Significant at the ,01 level.

South-Western has smaller average stroke counts in four of the theory categories that are statistically significant: bends and blends (G 3.524; SW 2.660); vowels (G 4.529; SW 4.062); word beginnings--joined (G 4.990; SW 4.559); and word endings--joined (G 4.954; SW 4.165). The Gregg system has statistically significant smaller stroke count averages in two categories: consonants (G 3.309; SW 6.000) and word endings--disjoined (G 5.221; SW 5.562).

In summary, the overall stroke count average for the theory categories is statistically in favor of South-Western. Four of the 11 theory groups are statistically in favor of South-Western with two in favor of Gregg.

Syllabic Intensity and Stroke Count

The stroke count as a function of the syllabic intensity of the word is presented in Table 5.20 for the 3,000 running shorthand-countable words. The majority of the words, 2023, 67.43 percent, used in the running copy are one-syllable words. Over one-third of the words in each system are words of one syllable and one stroke (G 1,003 words; SW 1,061 words). The South-Western word with zero shorthand strokes is the word three, which is not written in SW Century 21 with a shorthand character but as the figure. Two-syllable words represent 612 of the total 3,000 running-copy words; three-syllable words represent 251 of the total words; four-syllable words represent 85 of the total words; five-syllable words represent 28 of the total; and one word is a six-syllable word.

The large stroke counts are due to several cities with two-part outlines combined as one word. The 12 and 13 stroke counts in South-Western

Table 5.20. Syllabic Intensity and Stroke Count of Gregg DJ and SW Century 21 Shorthand in Writing 3,000 Running Shorthand-Countable Words

Syllabic Intensity	Stroke Count 0	1	2	3	4	5	6	7	8	9	10	11	12	13	Total Words	Total Strokes	Average Strokes	Standard Deviation	t Value
1																			
G	–	1003	582	251	155	31	1	–	–	–	–	–	–	–	2023	3701	1.829	1.022	1.998[b]
SW	1[a]	1061	544	276	111	28	2	–	–	–	–	–	–	–		3573	1.766	0.984	
2																			
G	–	8	66	108	159	164	75	27	5	–	–	–	–	–	612	2599	4.247	1.398	1.459
SW	–	14	84	113	149	152	62	28	10	–	–	–	–	–		2525	4.126	1.501	
3																			
G	–	–	8	36	52	56	40	38	17	1	1	2	–	–	251	1295	5.159	1.600	0.692
SW	–	–	6	30	58	67	44	32	13	–	1	–	–	–		1271	5.064	1.476	
4																			
G	–	–	–	3	11	11	21	21	10	4	3	–	–	1	85	540	6.353	1.778	2.238[b]
SW	–	–	4	4	5	26	23	9	11	2	–	–	1	–		489	5.753	1.718	
5																			
G	–	–	–	3	2	2	5	5	5	6	–	–	–	–	28	186	6.643	1.967	0.464
SW	–	–	1	3	2	1	6	5	7	2	1	–	–	–		179	6.393	2.061	
6																			
G	–	–	–	–	1[c]	–	–	–	–	–	–	–	–	–	1	4	4.000	–	–[d]
SW	–	–	–	–	1[c]	–	–	–	–	–	–	–	–	–		4	4.000	–	
TOTAL																			
G	–	1011	656	401	380	264	142	91	37	11	4	2	–	1	3000	8325	2.775	1.861	2.001[b]
SW	1	1075	639	426	326	274	137	74	41	4	2	–	1	–		8041	2.680	1.810	

[a]Word No. 235 three contains no shorthand characters in SW Century 21 shorthand.

[b]Significant at .05 level.

[c]Word No. 1258 organizational.

[d]Inadequate observations to calculate t value.

Note: Shorthand strokes for some two-part city outlines were counted together which accounts for the large shorthand stroke counts.

and Gregg in the four-syllable words reflect this procedure in the shorthand outlines for Corpus Christi.

The overall stroke count of the words as presented by the syllabic intensity of the word indicates that the average shorthand stroke for Gregg DJ in the 3,000 words is 2.775 and the average shorthand stroke for SW Century 21 is 2.680. The difference in the means is significant. Also, the difference between the means of the one-syllable words (G 1.829; SW 1.766) is significant. The one-syllable average stroke counts in the 1,000 word phase of the study were not significantly different at the 100-, 500-, or 1,000-word levels.

In the 3,000 running-copy words, the strokes added by capitalization marks were tallied by hand. Other marks of punctuation were not considered. As the capitalization marks are not included in the shorthand outlines in the Gregg dictionary, a dictionary-correct outline may be written without use of the capitalization marks. In the South-Western dictionary the capitalization marks are included for outlines containing proper names. Capitalization marks are often eliminated by shorthand writers and added in the transcription phase of the shorthand process. Capitalization marks were not considered in the average stroke counts of Tables 5.15, 5.19, and 5.20.

In the 3,000 running-copy words, 86 capitalizaton marks were determined for South-Western resulting in 86 shorthand strokes. One hundred five capitalizations were determined for Gregg with 315 shorthand strokes. This increase reflects the three shorthand strokes for each capitalization mark in Gregg with one stroke assigned to each pen lift within the capitalization marks. The 19 additional capitalization marks required in

Gregg are the primary result of 15 dates in the running copy. South-Western does not capitalize months with a following date as the date is written below the shorthand outline for the month. The other capitalization marks result from the South-Western procedure of placing the mark at the end of the second outline when two-part outlines occur. Four such outlines occurred with city names.

The stroke count for writing the 3,000 words in Gregg DJ as reported in Table 5.20 was 8,325 resulting in an average of 2.775 strokes per word. The total stroke count reported for South-Western was 8,041 resulting in an average of 2.680 strokes per word. The difference between means is significant.

Adding the capitalization strokes for each system to the stroke count reported in Table 5.20, the Gregg total stroke count increases to 8,659 (315 + 19 additional words) resulting in an average of 2.886 shorthand strokes per word, an increase of 0.111 strokes per word. Adding the 86 strokes resulting from capitalization to the stroke count reported for South-Western, the total stroke count is increased to 8,127 with an average of 2.709 shorthand strokes per word, or an increase of 0.029 strokes per word.

Summary. Three thousand running shorthand-countable words were studied by the methods of writing used to construct the outlines and the principles used within the words. Gregg DJ uses 3,162 methods of constructing the 3,000 words compared with 3,226 of South-Western. As determined by the chi-square test, the difference in the use of the methods of writing is significant. Memory words represent the most frequent method of outline construction.

Overall, the syllabic intensity of the words when viewed by their methods of writing is not significantly lower for Gregg than South-Western (G 1.501; SW 1.531). Two individual methods of writing, however, reflect significant differences.

The methods-of-writing average stroke count of 2.757 for Gregg and 2.708 for South-Western is not significantly different. The average stroke count for memory words and memory derivatives for Gregg, however, is significantly less than South-Western. The alphabetic and shorthand theory words use significantly smaller stroke counts in South-Western.

Both systems use about 81 percent (G 81.18; SW 81.15) of the principles identified for their systems in writing the 3,000 words; however, South-Western uses about 70 percent (71.74 percent) of the number of principles that Gregg does in writing the running copy (99 compared with 138). In words using principles, 3,726 frequencies of principles occur in Gregg DJ compared with 2,817 frequencies in writing the SW Century 21 principles.

The use of the principles within the theory categories reflect significant differences between systems. Gregg DJ and SW Century 21 have principles unique to their systems which account for large clusters of frequency differences. Within the words using principles, the average syllabic intensity between systems is not significantly different. The average stroke count of words written using Gregg shorthand (4.449) and South-Western shorthand (4.216) is significantly different beyond the .001 level.

Viewing the average stroke counts in writing the 3,000 words by themselves rather than as used in methods of writing or in theory words,

the average stroke count for Gregg is 2.775 and for South-Western, 2.680. The difference in the means is significant. When capitalization marks are added, the average becomes slightly higher: Gregg 2.886 shorthand strokes per word and South-Western 2.709 shorthand strokes per word.

C. CHAPTER SUMMARY

For the purpose of this study, the memory load was defined to be the fundamentals of a shorthand system beyond the shorthand alphabet letters (single-letter vowel, consonant, and consonant digraph symbols) which have to be memorized to enable one to read and write the shorthand accurately. Memory load includes the memory forms and their derivatives, abbreviated/contracted words and their derivatives, and the principles--both textually declared and undeclared in the system. Each word was studied for the decision points in that word; that is, any facet in the construction of the word that requires knowledge beyond the shorthand alphabet letters (single-letter vowel, consonant, and consonant digraph symbols) to construct a dictonary-correct outline.

In the 1,000 phase of the study the memory load of Gregg DJ shorthand, as defined by the above components, total 2,352 elements (198 memory and memory derivatives; 2 abbreviated/contracted words and derivatives; and 2,152 textually declared and undeclared principle frequencies). The memory load of SW Century 21 shorthand totals 1,942 elements (304 memory and memory derivatives; 8 abbreviated/contracted words and derivatives; and 1,630 textually declared and undeclared principle frequencies). The average stroke count per word of the first 1,000 Mellinger words is 4.075

for Gregg and 3.876 for South-Western. The difference in means is significant at the .01 level. These stroke counts are based on an average syllabic intensity of 2.013 (calculated from Table 5.10) for the 1,000 words.

In the 3,000 running shorthand-countable words, the memory load of Gregg DJ shorthand totals 5,117 components (1,387 memory and memory derivatives; 4 abbreviated/contracted words and derivatives; and 3,726 textually declared and undeclared principle frequencies). The memory load of SW Century 21 shorthand totals 4,138 components (1,302 memory and memory derivatives; 19 abbreviated/contracted words and derivatives; and 2,817 textually declared and undeclared principle frequencies). The average stroke count per word in writing the 3,000 running shorthand-countable words is 2.775 for Gregg and 2.680 for South-Western. The difference in means is significant at the .05 level. These stroke counts are based on an average syllabic intensity of 1.495 (calculated from Table 5.20) for the 3,000 running shorthand-countable words.

Within each system at both the methods-of-writing level and the principles level, unique differences occur between systems to combine to make up the memory load. Some methods of writing produce greater or smaller frequencies, syllabic intensities, and stroke counts in one system than in the other system; some principles produce greater or smaller frequencies, syllabic intensities, and stroke counts in one system than in the other system. These differences have been discussed in detail within the chapter.

Briefly, the SW Century 21 writer makes 82.57 percent (1,942 ÷ 2,352) as many decisions as the Gregg DJ writer makes beyond the basic shorthand alphabet in writing the 1,000 most frequently used Mellinger words and does so with 0.199 fewer shorthand strokes (4.075 - 3.876) per word. In writing 3,000 running shorthand-countable words, the SW Century 21 writer makes 80.87 percent (4,138 ÷ 5,117) as many decisions as the Gregg DJ writer makes beyond the basic shorthand alphabet and does so with 0.095 fewer shorthand strokes (2.775 - 2.680) per word.

CHAPTER VI

TEXTBOOK ANALYSIS OF THE FIRST 1,000 MELLINGER WORDS

The purpose of this chapter is to briefly describe the beginning college-level textbooks analyzed in this study and to describe the results of the computerized textbook analysis of the first 1,000 Mellinger words. The beginning college-level textbooks analyzed were: Century 21 Shorthand, Theory and Practice by Irol W. Balsley[1] and Gregg Shorthand for Colleges, Diamond Jubilee Series by Louis A. Leslie, Charles E. Zoubek, A. James Lemaster, and Russell J. Hosler.[2] The textbook description is presented first followed by the results of the computer analysis.

A. TEXTBOOK DESCRIPTION

The beginning college textbooks of each system are described as they relate to major emphases of the study: shorthand principles, memory words, and abbreviated/contracted forms. Suggested lesson-presentation schedules and special features of the textbooks are described.

Principle Presentations

Gregg. The ten chapters, 70 lessons, in the Gregg textbook are divided into three parts: (1) Principles, Chapters 1-8; (2) Reinforcement, Chapter 9; and (3) Shorthand Transcription Skill Building, Chapter

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[1]Irol W. Balsley, Century 21 Shorthand: Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[2]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973).

10. Each chapter is divided into lessons according to the intent of the three parts. Part I, Principles, consists of 45 lessons with each chapter containing six lessons. New shorthand principles are presented in the first five lessons of each chapter with the sixth lesson a recall lesson reviewing principles introduced in the preceding five lessons. The review chapters present joining principles and shorthand penmanship accuracy practices. Shorthand words, brief forms, and phrases are reviewed in recall charts with suggested time limits for reading the charts. A reading and writing practice of letters and/or articles follows the recall charts.

Shorthand principles are presented in the first five lessons of each chapter. The new principles are presented as a whole at the beginning of the lesson, and each new principle is illustrated with words containing the principle. All new principles are presented before the reading practice (Lessons 1-5) or the reading and writing practice (beyond Lesson 6). New theory presentations are completed by Lesson 47 in the Gregg textbook accounting for 40 lessons to present the Gregg theory (eight review lessons including Lesson 48).

Part II, Reinforcement (Chapter 9), of the Gregg textbook contains eight lessons designed to review the principles presented in Part I. Each lesson reviews one chapter from the preceding section.

Part III, Shorthand and Transcription Skill Building (Chapter 10), contains 14 lessons reviewing major segments of the system such as, brief forms and derivatives, phrasing principles, joined and disjoined word beginnings and endings, blends, vowels, numbers and quantities, and major principles.

South-Western. The South-Western textbook contains 80 lessons. Within these 80 lessons, three clusters of lesson groupings concentrate on introduction and reinforcement of theory. The theory is introduced in the first 33 lessons with review lessons presented every fourth lesson. Therefore, the theory is presented in 27 of the first 33 lessons. Each theory lesson begins with a review of the principles presented in the previous lesson before introducing the theory for the new lesson. Phonetic spelling and shorthand examples are given when a new principle is introduced. After each principle is introduced, it is applied in sentences or paragraphs of shorthand connected copy. The review, or recap, lessons are cumulative, reviewing the principles presented to that point.

A second review cycle of principles is presented in Lessons 36-45. A third review cycle is built into Lessons 76-80.

Summary. Gregg shorthand principles are presented in 40 lessons with eight review lessons. By Lesson 47, the shorthand theory introduced in Volume I is presented. In South-Western, the principles are introduced in 27 lessons with review lessons every fourth lesson. By Lesson 33, the shorthand theory presentation is completed. Each book provides three major emphases on principles: each has an introduction cycle, a long second review cycle, and a shorter third review cycle.

In the Gregg text, all principles are presented at the beginning of the lesson with reading and writing practice available after presentation of the new elements. In the South-Western textbook, after each new principle is introduced, sentences or paragraphs containing samples of the

new principles follow the introductions. Both textbooks include a theory index to the individual systems.

Memory forms

Gregg. The introduction of the 129 Gregg memory forms--brief forms--is begun in Lesson 3. Brief forms are presented in 15 lessons with nine brief form outlines presented in each lesson with the exception of Lessons 17 and 33, which have six outlines apiece. The 129 brief forms represent 148 words. Brief forms are not presented in consecutive lessons; at least one lesson exists between presentations. In lessons introducing brief forms, the reading and writing practice contains a brief-form letter emphasizing the new brief forms. Lessons not introducing new brief forms contain a brief-form review letter, which reviews previously presented brief forms. Brief forms and derivatives are reviewed in Part II, Chapter 9, of the textbook at the beginning of each lesson. In Part III, Chapter 10, Lessons 57 and 66 review brief forms and derivatives.

South-Western. In the South-Western textbook the memory forms--speedforms--are presented and written in color in their introductory lessons and in the speedform accelerator review sections. The introduction of speedforms is begun in Lesson 1 and completed by the end of Lesson 18. Speedforms are presented in 14 lessons as Lessons 4, 8, 12, and 16 are review lessons. The 175 speedforms represent 214 words. The following schedule of speedform presentation is used: Lesson 1, 12; Lesson 2, 18; Lesson 3, 24; Lesson 5, 13; Lesson 6, 10; Lesson 7, 4; Lesson 9, 15; Lesson 10, 14; Lesson 11, 14; Lesson 13, 7; Lesson 14, 9; Lesson 15, 15;

Lesson 17, 10; and Lesson 18, 10 for the total 175 speedform outlines. Beginning with Lesson 19, a five-lesson review cycle (excluding Lesson 20) emphasizes speedform and speedform related words. A third review cycle is implemented in Lessons 36-45.

Summary. Both systems use memory forms for frequently used words to be written with unusual speed and facility. Gregg has a smaller number of memory forms than South-Western and spreads the introduction of these words over more lessons than does South-Western. Fifteen nonconsecutive lessons with nine brief form outlines in each lesson (except two lessons in which six are presented) are used for presenting the 129 brief form outlines. Beginning with Lesson 1, South-Western presents the 175 speedform outlines in 14 lessons. The number of speedform outlines presented range from 24 to 4 outlines a lesson. Speedforms are presented consecutively except for every fourth lesson, which is a review lesson. Both textbooks contain a panel of memory forms in the back of the text.

Abbreviated/Contracted Words

Gregg. Abbreviated words are presented in the Gregg textbook toward the end of the theory lessons, Lesson 41. Nine shorthand outlines represent 12 abbreviated words in Gregg DJ shorthand. In the preceding lesson, Lesson 40, the abbreviated words in families are introduced with six family endings presented. These endings were included with the word endings categories in the present study.

South-Western. Contracted/correspondence forms are presented as abbreviated forms for long, frequently occurring words. Twenty-one contracted words are used in SW Century 21 shorthand. Commonly used salutations and complimentary closings are emphasized as correspondence forms. Contracted/correspondence forms are first introduced in the college text in Lesson 13 with two correspondence forms. The first contracted word is introduced in Lesson 23. The introduction of the contracted words is not complete by the end of the theory presentations in Lesson 33. Only seven contracted words or their derivatives have been introduced by that time. The 21 contracted words were keypunched onto data cards and the PL/1 SEARCH Program was used to validate the occurrence of the words in the textbook. Four of the basic contracted words for the SW Century 21 shorthand system do not appear in the South-Western college textbook: delinquent, illustrate, mathematics, and psychiatric. A list of the contracted forms in SW Century 21 shorthand is not available in the South-Western college textbook.

Summary. Both Gregg and South-Western use abbreviated forms for long, frequently occurring words. Gregg DJ shorthand has a smaller number than SW Century 21 shorthand. All the Gregg DJ abbreviated words are introduced in a listing in Lesson 41, whereas the South-Western contracted shorthand words are introduced one or two words at a time beginning with Lesson 23. The introduction of contracted words continues beyond the initial theory lessons (Lesson 33). Four of the basic contracted words are not introduced in the South-Western college text. South-Western correspondence forms are first introduced in Lesson 13 and are introduced in the lessons one or two expressions at a time for the particular copy at hand.

Lesson Presentations[3,4]

After the initial two lessons, on which four periods may be spent, the suggested presentation pace for the Gregg textbook is a lesson to each 40-minute period. The South-Western text is written for an 80-period course. With courses of 75 periods, the author suggests omitting Lessons 76-80; for courses of 70 periods, Lessons 71-80 may be omitted. Further, the review lessons in the theory sections may be omitted if necessary. The authors of the Gregg teacher's manual suggest that the review lessons in the theory presentations should take about ten minutes. If the students respond quickly and accurately to the drills, the teacher may work on the previous day's homework assignment.

Special Features

Both systems provide special features in their textbook materials to assist students in learning shorthand and building transcription skills. The Gregg textbook includes instructions on how to practice, reading scoreboards, recall charts, check lists, a cumulative brief-form chart, and a phrase chart. Various components are added to help build transcription skills: vocabulary builders, marginal spelling reminders, spelling families, similar word drills, punctuation practice, common prefixes, grammar checkups, and transcription quizzes.

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[3]Irol W. Balsley, Instructor's Manual, Century 21 Shorthand: Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974), pp. 1-5.

[4]Louis A. Leslie et al., Instructor's Handbook for Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/Mc-Graw Hill Book Co., 1973), pp. 1-5.

Some of the special features of the South-Western textbook include: preview practice, word sprints and dashes, phrasing emphasis, speedform derivative development, reading rates, and geographical locations. Special attention is given to transcription readiness in the South-Western textbook with punctuation rules, word selections, word division rules, spelling demons and spelling rules, phonetic study, and previewed new dictation. The South-Western textbook is built upon computer controlled material which is to provide control practice on frequently used words. A testing program is provided for the South-Western teacher in the accompanying teacher's manual.

Both the Gregg and South-Western systems have a teacher's manual associated with the introductory textbooks. In addition to the teacher's manual and the student's transcript, additional instruction aids are available. Both systems have film strips, shorthand tapes, memory-form charts, shorthand dictionaries, transparencies, instructional tapes, and shorthand workbooks. In addition, a video tape instructional program is available for the South-Western shorthand. Each system provides an entire range of instructional textbooks to accomplish a shorthand program. Textbooks are available for beginning shorthand to advanced speedbuilding and transcription.

B. TEXTBOOK ANALYSIS

The shorthand-countable words of the two shorthand textbooks were keypunched onto data cards with three running tallies kept on each textbook: connected-copy words, presented words, and total words. The keypunching guidelines were utilized as in the 3,000 running shorthand-

countable words. To be considered a shorthand-countable word, the outline for the word had to contain a shorthand character. Hyphenated compound modifiers were punched as separate words to reflect the separate shorthand outlines. Also, the possessive form of words on the 1,000 word list were punched as plural words to reflect the shorthand outline where appropriate. The study was limited to the lesson-structured textbook copy.

The textbook words were punched using both the shorthand transcripts and the textbooks. These sources were checked constantly for coding changes between presented words and connected copy as well as the structure of the shorthand outline.

A PL/1 computer program was used to acquire the occurrences of the 1,000 words in the three textbook tallies, the places of word introductions in connected copy or presented words, and the points of word introductions (actual word number in the three tallies). The information from the initial programs was stored in the computer to provide the data base for the cross comparisons on the points of introduction and absolute deviations from adjusted Mellinger frequencies.

The following analysis presents the words listed and used in the textbooks, the places of the word introductions in the textbooks, and the frequencies of occurrences of the words in the textbooks. This information is summarized by the cumulative 100-word Mellinger groups, the methods of writing the shorthand outlines, and the principles used. A brief review of the procedures for the points of introductions and the absolute deviations from adjusted Mellinger frequencies are presented with the summarized data.

Words Listed and Used

Cumulative word groups. The first 1,000 Mellinger words listed and used in the shorthand textbooks of the two systems are presented in Table 6.1 by cumulative word groups. As the word club appeared twice on the Mellinger list, the second occurrence (No. 816) was deleted, which resulted in 999 words rather than the 1,000 word total. Fifty of the first 1,000 words do not appear in the Gregg DJ text, and six do not appear in the SW Century 21 text. After the list of missing words was determined, these words were punched onto data cards and the PL/1 SEARCH program was used to verify the nonexistence of these words in the keypunched textbook copy. A list of the missing words is presented in Appendix F.

The first 200 words are used by both systems in their textbooks. Beyond this point, the Gregg text does not utilize all the Mellinger 1,000 words. Words from each successive word group are missing. The South-Western textbook contains all the Mellinger words through the first 400 words. One word is missing from the 500-word group, and words are also missing from the 700-, 800-, and 900-word groups. Six of the first 1,000 Mellinger words do not occur in the South-Western textbook.

The Significance of a Difference Between Proportions test was applied to the proportion of words used in the textbooks of each system. The test revealed that the difference between the proportions of use is significant beyond the .001 level ($T = 6.000$). Thus the Gregg textbook contains significantly fewer of the 1,000 words than does the South-Western text. All data and procedures reported in the remainder of the chapter are reported in light of this difference.

Table 6.1. The First 1,000 Mellinger Words[a] Listed and Used in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Cumulative Word Groups

Cumulative Word Groups	Words Listed	Words Used	
		Gregg	South-Western
10	10	10	10
50	50	50	50
100	100	100	100
200	200	200	200
300	300	298	300
400	400	393	400
500	500	487	499
600	600	582	599
700	700	676	698
800	800	769	796
900	899	856	893
1000	999[c]	949	993
p		.9499	.9940
$p_1 - p_2$		-.0441	
T^d		6.0000[e]	

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]The word club appeared twice on the Mellinger list; the second occurrence, No. 816, was deleted, resulting in 999 total words.

[d]Significance of a Difference Between Proportions

[e]Significant beyond the .001 level (3.291 required).

Methods of writing. The first 1,000 Mellinger words listed and used in the textbooks of the two systems are presented in Table 6.2 by the methods of writing used to construct the outlines. This analysis indicates the methods of writing with the greatest proportion of words used in and missing from the textbooks.

Of the 1,077 methods of writing used in constructing the 1,000 words in Gregg shorthand, 1,022 of the methods of writing occur in the first writing of the 949 (of the 1,000) words that appear in the textbook. The difference of 55 methods of writing compared with 50 missing words is attributable to the use of two methods of writing in five of the nonoccurring words. Of the 1,124 methods of writing used in the South-Western system to write the first 1,000 Mellinger words, 1,120 methods of writing occur in the first writing of the 993 (of the 1,000) words that appear in the textbook. The difference of only four methods of writing (with six words missing) is the result of the use of the dual-word provision for cents and percent. Both cents and percent occur in the South-Western textbook following figures and as words by themselves. As these situations entail different shorthand principles, the separate principles were added as they occurred. The total occurrences of percent and cents in each text are presented below:

	Gregg	South-Western
Percentx (with figure)	30	31
Percent (without figure)	0	1
Centsx (with figure)	1	5
Cents (without figure)	0	11

Table 6.2. Methods of Writing the First 1,000 Mellinger Words[a] Listed and Used in the Gregg DJ and SW Century 21 Shorthand Textbooks[b]

Methods of Writing[c]	Gregg		South-Western	
	Listed	Used	Listed	Used
Alphabetic	342	329	323	321
Abbreviated/Contracted	2	2	8	8
Memory	121	121	153	153
Memory Derivative	77	69	151	151
Shorthand Theory Word	535	501	489	487[d]
Total	1077	1022	1124	1120[d]

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]If two methods of writing were used in forming a word, the word was counted in each classification.

[d]In addition to percent and cents, percentx (with figure) and centsx (with figure) occurred.

Cents and centsx in Gregg DJ contain the same theory points. No special outline occurs for cents when it follows a figure as it does in South-Western shorthand.

Both systems use the memory words and abbreviated/contracted words listed in the Mellinger 1,000 words in their textbooks. All the SW Century 21 memory derivatives present in the 1,000 Mellinger words are used in the South-Western text. In the Gregg text, however, 69 of the 77 listed memory derivatives in the 1,000 words, 10.39 percent, are not used in the textbook material.

Of the Gregg alphabetic words, 3.8 percent (13 words), are not used in the textbook. Of the shorthand theory words identified in the 1,000 Mellinger words, 6.36 percent (34 words) are not utilized in the Gregg textbook. This method of writing represents the largest group of words missing from the Gregg textbook.

Of the 1,077 total methods of writing used in the writing of the first 1,000 words in Gregg DJ shorthand, 1,022, 94.89 percent, of the methods of writing occur in the first writing of the 949 (of the 1,000) words that appear in the textbook. Of the 1,124 total methods of writing used in the writing of the first 1,000 words in SW Century 21 shorthand, 1,120, 99.64 percent, of the methods of writing occur in the first writing of the 993 (of the 1,000) words that appear in the textbook.

Shorthand principles. The shorthand principles listed in the first 1,000 Mellinger words and used in the Gregg and South-Western textbooks are presented in Table 6.3 by theory categories. Both systems use all the disjoined word beginnings and miscellaneous shorthand principles

Table 6.3. Principles Listed and Used in Writing the First 1,000 Mellinger Words[a] in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Theory Categories

Theory Category[c]	Gregg Principles		South-Western Principles	
	Listed	Used	Listed	Used
Bends & Blends	178	164	144	144
Consonants	24	23	1	1
Vowels	94	84	123	121
Word Beg.--Disj.	10	10	10	10
Word Beg.--Joined	158	149	84	83
Word End.--Disj.	69	68	167	165
Word End.--Joined	167	153	60	60
Miscellaneous	1	1	4	6[d]
Joinings	1094	1014	761	756
Auxiliary	4	1	7	7
Undeclared	353	320	269	265
Total	2152	1987	1630	1618

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]If two or more principles were used in forming a word, the word was counted in each principle.

[d]In addition to percent and cents, percentx (with figure) and centsx (with figure) occurred.

occurring in the Mellinger 1,000 words in the textbooks of their systems. In South-Western, the miscellaneous column reflects the dual use of cents and percent with and without figures. All the blends, consonants, and auxiliary rules used by South-Western in constructing the 1,000 words are used in the South-Western textbook. Of the 1,630 total frequencies of the principles used in the writing of the first 1,000 words in SW Century 21 shorthand, 1,618, 99.26 percent, of the principles occur in the first writing of the 993 (of the 1,000) words that appear in the textbook. Of the 2,152 total frequencies of the principles used in writing the 1,000 Mellinger words in Gregg DJ, 1,987, 92.33 percent, occur in the first writing of the 949 (of the 1,000) words that appear in the textbook.

Summary. Of the first 1,000 Mellinger words, 50 are not used in the Gregg DJ textbook, and six are not used in the SW Century 21 textbook. When the frequencies of the missing words are translated into the outline construction patterns of the system, 5.11 percent of the Gregg methods of writing are not used compared with 0.36 percent unused in South-Western. The memory forms and abbreviated/contracted words listed in the first 1,000 Mellinger words are included in the textbooks of each system. All the memory derivatives of South-Western are also used. Of the first writing of the 1,000 words that appear in the textbooks (G 949; SW 993), Gregg uses 92.33 percent (1,987) and SW Century 21, 99.26 percent, (1,618) of the total frequencies of the principles used in writing the first 1,000 words.

Place of Introduction

Cumulative word groups. The place of introduction of the first 1,000 Mellinger words is presented in Table 6.4 by the cumulative-word groups. Presented words were defined as those words appearing in lists, charts, or highlighted individually as unrelated thought expressions. Connected copy was defined as textbook words appearing in related thought expressions, such as sentences, paragraphs, or letters.

The words in the first 10-word group are introduced in presented words in both textbooks. After the first 10-word group, both systems introduce words in contextual copy within each word grouping. Within the first 50-word grouping, 47 Gregg words were introduced in presented words; and 49 of the South-Western words were introduced in the presented words. Within this first 50-word group, 33 of the words written in Gregg shorthand and 34 written in SW Century 21 shorthand are memory forms.

Of the first 1,000 Mellinger words used in each text, 70.29 (698 of 993) of the South-Western introductions are in presented words compared with 50.37 percent (478 of 949) Gregg DJ introductions in presented words. Both systems introduce more of the 1,000 words used in their textbooks in the presented words than in the contextual copy.

Methods of writing. The place of introduction of the Mellinger first 1,000 words by the methods of writing used to construct the outline, is presented in Table 6.5. When tabulated by the methods of writing employed to construct the Gregg outlines, 50.10 percent (512 of 1,022) are introduced in the connected copy and 49.90 percent (510 of 1,022) in presented words. With South-Western, however, 67.59 percent (757 of 1,120)

Table 6.4. Place of Introduction of the First 1,000 Mellinger Words[a] in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Cumulative Word Groups

Cumulative Word Groups	Presented-Word Introduction		Connected-Copy Introduction	
	Gregg	South-Western	Gregg	South-Western
10	10	10	0	0
50	47	49	3	1
100	89	97	11	3
200	157	184	43	16
300	214	253	84	47
400	260	319	133	81
500	305	390	182	109
600	340	454	242	145
700	378	514	298	184
800	410	579	359	217
900	441	640	414	253
1000[c]	478	698	471	295

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]The word club appeared twice on the Mellinger list; the second occurrence, No. 816, was deleted, resulting in 999 total words.

Table 6.5. Place of Introduction of the First 1,000 Mellinger Words[a] in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Methods of Writing

Methods of Writing[c]	Presented-Word Introduction		Connected-Copy Introduction	
	Gregg	South-Western	Gregg	South-Western
Alphabetic	142	248[d]	187	72
Abbreviated/Contracted	2	7	-	1
Memory	121	153	-	-
Memory Derivative	13	57	56	94
Shorthand Theory Word	232	292[d]	269	196
Total	510	757	512	363

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]If two methods of writing were used in forming a word, the word was counted in each classification.

[d]Hand changes were made to the computer program to indicate the introduction of the word separate as an adjective. On the 1,000 data cards, separate was listed as a verb to correspond to the first dictionary listing. The computer program listed 249 alphabetic words and 291 theory word introductions.

of the words used are introduced in presented words and 32.41 percent (363 of 1,120) are introduced in connected copy.

In both systems, the outlines written as memory forms are introduced in the presented words. No memory-form word in either system is introduced in connected copy. The greater portion of memory-form derivatives used in the textbooks of both systems, however, is introduced in connected copy. The greater portion of the alphabetic and principle words of South-Western are introduced in presented words, whereas the greater portion of the alphabetic words and principles of Gregg are introduced in connected copy. These differences reflect the distinctive textbook formats of the two systems.

The one contracted/correspondence form of South-Western introduced in connected copy is the contracted derivative scheduled introduced in Lesson 32-B (shorthand-countable word No. 18,989 in the textbook). The primary contracted form schedule is introduced in Lesson 28-B.

Shorthand principles. The place of introduction for the first 1,000 Mellinger words by the principles in the words is summarized by theory category groups in Table 6.6. Of the 1,000 frequent words using shorthand principles, most of the words in Gregg, 58.63 percent (1,165 of 1,987) are introduced in the contextual copy. The reverse occurs in South-Western with 68.82 percent (1,017 of 1,619) presented word introductions. In eight of the theory categories, the greater portion of the words in the Gregg text are introduced in contextual copy; whereas in ten theory categories, the greater portion of the words in the South-Western text are introduced in the presented words. In both systems, the introduction of those words using disjoined word endings occurred

Table 6.6 Place of Introduction of the First 1,000 Mellinger Words[a] in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Theory Category

Theory Category[c]	Presented-Word Introduction		Connected-Copy Introduction	
	Gregg	South-Western	Gregg	South-Western
Bends & Blends	72	91	92	53
Consonants	14	1	9	-
Vowels	39	87[d]	45	35
Word Beg.--Disj.	7	7	3	3
Word Beg.--Joined	70	58	79	25
Word End.--Disj.	18	52	50	113
Word End.--Joined	64	40	89	20
Miscellaneous	1	6[e]	-	-
Joinings	421	520	593	236
Auxiliary	-	6	1	1
Undeclared	116	149	204	116
Total	822	1017[d]	1165	602

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]If two or more principles were used in forming a word, the word was counted in each principle.

[d]Hand changes were made to the computer program to indicate the introduction of the word separate as an adjective using vowel principle No. 303. On the 1,000-data card, separate was listed as a verb to correspond to the first dictionary listing. The computer program listed 86 vowel and 1016 total presented word introductions.

[e]In addition to percent and cents, percentx (with figure) and centsx (with figure) occurred.

more in the connected copy of the textbooks. In the South-Western system, this is accounted for by the words using the -ed principle (71 occurrences in the 1,000 words) and the -ing principle (56 occurrences in the 1,000 words). In the Gregg system, the -ing principle (55 occurrences in the 1,000 words) accounts for the major portion.

Summary. The textbook layout is a contributing factor to the differences in the place of word introductions as summarized in Tables 6.4, 6.5, and 6.6. Typically, in the Gregg textbook, a group of words illustrating the principles and/or introducing brief forms is given at the beginning of the lesson. The remainder of the lesson contains connected matter. In the South-Western textbook, a group of words is presented with connected-copy following the word presentations. In a typical lesson, words are presented, connected copy follows, more words are presented, and connected copy follows again, with the cycle repeated for each new group of presented words. After Lesson 33 a group of new words may be previewed at the end of a lesson which will be used at the beginning of the next lesson. The presented-words tally in South-Western is expanded by the introduction of the lessons with words recapping the previous lesson, vocabulary-expansion words, and reinforcement words.

Of the 51,536 total shorthand-countable words in the lesson-structured copy of the South-Western textbook, 4,569, 8.87 percent, are presented words; 46,967, 91.13 percent, are connected-copy words. Of the 45,835 total shorthand-countable words presented in the lessons of the Gregg textbook, 3,170, 6.92 percent, are presented words; 42,665, 93.08 percent, are connected-copy words. The South-Western text contains 1,399 more presented words, unrelated thought patterns, than does the Gregg text.

Occurrences

Three separate tallies were kept of the occurrences of the first 1,000 Mellinger words in the presented words, connected-copy words, and the total-copy words in the textbooks of the two systems. A computer listing of the 1,000 words as they occurred in the presented words, connected copy, and the total copy of the textbooks was printed. The listing was printed according to the three tallies with each occurrence of the word stated by the shorthand-countable word number of the separate occurrences and the number of shorthand-countable words between each successive occurrence of the word. A sample of the total-copy tallies for Mellinger words Nos. 990-1,000 is presented in Appendix F. This computer printout was included at the end of the PL/1 textbook program for each system. This portion of the printout produced 1,462 computer printout pages for the Gregg text and 1,564 pages for the South-Western text. These printouts provided a guide to each occurrence of each word in the three separate tallies as well as the number of words between occurrences. The sample pages included in Appendix F depict the use of percentx and centsx in each system.

The data in the following three tables are condensed from the above-mentioned computer printouts. The occurrences of the first Mellinger 1,000 words in the Gregg and South-Western textbooks are summarized in Table 6.7 for the connected copy, in Table 6.8 for the presented words, and in Table 6.9 for the total shorthand-countable words. These tables are presented by the cumulative word groupings and represent occurrences as encountered in the lesson-structured copy of the textbooks.

The occurrences of the 1,000 words in the connected copy are summarized in Table 6.7. The frequencies are reported in five-word increments with those words occurring more than 30 times separated. All the first 50 words are used more than 30 times in the textbooks of both systems. In the first 200 most frequently used Mellinger words, 137 in the Gregg text and 141 in the South-Western text are used more than 30 times. Thereafter, the new words appearing in this category increase at a rapidly diminishing rate.

The words occurring 1-5 times in the connected copy represent the largest group of occurrences for Gregg (322 words) and the second largest for South-Western (245 words). Those words occurring 6-10 times in the connected copy represent the largest group of occurrences in the South-Western text (276 words) and the second largest in the Gregg text (187 words). As categories of word frequencies increase from 11 to 30 words, the occurrences decrease in both textbooks.

The occurrences of the 1,000 Mellinger words in the presented words of both texts are presented in Table 6.8 by cumulative word groups. The frequencies are reported in one-word increments to 10; thereafter, those words occurring more than 10 times are reported in one group.

At the first 10-word group, 6 words appear in Gregg presented words more than 10 times, and 8 words appear in South-Western presented words more than 10 times. The word we occurs 2 times in Gregg presented words; and appears 5 times; a and your appear 6 times. In the South-Western presented words, the word a occurs once, and the word and appears 8 times.

Within the first 50-word group, 19 of the words in the Gregg text and 24 in the South-Western text appear in the presented words more than

Table 6.7. Connected-Copy Occurrences of the First 1,000 Mellinger Words[a] in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Cumulative Word Groups

Cumulative Word Groups	1 - 5		6 - 10		11 - 15		16 - 20		21 - 25		26 - 30		above 30	
	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western
10	-	-	-	-	-	-	-	-	-	-	-	-	10	10
50	-	-	-	-	-	-	-	-	-	-	-	-	50	50
100	-	-	-	-	1	1	3	-	3	1	-	4	93	94
200	3	1	10	7	11	9	20	11	10	11	9	20	137	141
300	19	5	29	27	28	37	28	32	22	21	19	29	153	149
400	50	21	47	57	45	60	41	48	26	28	23	33	160	153
500	82	43	73	93	60	80	46	57	31	35	28	34	162	157
600	121	68	99	130	72	99	53	67	36	37	31	38	165	160
700	160	107	131	170	82	109	56	73	38	39	33	38	167	162
800	220	147	152	211	87	120	59	77	39	40	35	39	168	162
900	267	201	173	237	96	131	63	80	41	41	35	40	168	162
1000[c]	322	245	187	276	109	144	66	81	43	42	36	41	169	163

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]The word club appeared twice on the Mellinger list; the second occurrence, No. 816, was deleted, resulting in 999 total words.

Table 6.8. Presented-Word Occurrences of the First 1,000 Mellinger Words[a] in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Cumulative Word Groups

Cumulative Word Groups	1		2		3		4		5		6		7		8		9		10		Above 10	
	G	SW	G	SW	G	SW	G	SW	G	SW	G	SW	G	SW	G	SW	G	SW	G	SW	G	SW
10	-	1	1	-	-	-	-	-	1	-	2	-	-	-	-	1	-	-	-	-	6	8
50	4	3	4	6	1	2	4	1	4	1	5	4	2	4	4	2	3	2	-	1	19	24
100	15	19	11	16	11	8	10	5	10	2	6	7	4	5	4	5	3	3	1	3	20	25
200	49	66	23	43	26	13	19	6	15	4	10	10	4	7	4	9	3	4	1	3	20	26
300	79	115	37	65	32	18	22	9	16	4	12	10	6	7	4	9	3	5	1	3	21	26
400	109	168	49	84	40	21	22	11	17	5	14	11	6	7	4	9	3	5	1	3	21	26
500	139	209	65	114	43	26	22	13	17	5	14	11	6	8	4	9	3	5	1	3	21	26
600	169	258	71	131	47	37	22	13	18	5	15	11	6	8	4	9	3	5	2	3	21	26
700	198	303	83	151	48	40	23	15	18	6	15	11	6	8	4	9	3	5	2	3	21	26
800	219	359	90	169	51	41	24	16	19	6	15	11	6	8	4	9	3	5	2	3	21	26
900	249	407	97	191	52	43	24	17	19	6	15	11	6	8	4	9	3	5	2	3	21	26
1000[c]	277	456	103	208	58	47	25	17	21	6	15	11	6	8	4	9	3	5	2	3	21	26

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]The word club appeared twice on the Mellinger list; the second occurrence, No. 816, was deleted, resulting in 999 total words.

10 times. After the first 50-word group, only two words appear in the presented words of each text more than 10 times: Gregg--Word No. 80, he (13 occurrences), and Word No. 213, able (15 occurrences); South-Western--Word No. 80, he (16 occurrences), and Word No. 106, like (11 occurrences).

Words appearing once in the presented words total 456 in South-Western and 277 in Gregg. Words with two frequencies account for 208 words in South-Western and 103 in Gregg. For each succeeding presented-word frequency to 10, the number of words declines rapidly with the exception of one South-Western group which is smaller. More than half the 1,000 Mellinger words used in the presented words of the textbook occur only once (Gregg 277 of 535 total; South-Western 456 of 796 total).

The occurrences of the first 1,000 most frequently used words as they occur in the entire textbook, combining the connected copy and the presented words, are summarized in Table 6.9. The first 50 words occur in each system's textbook more than 30 times. Ninety-three of the first 100 most frequently used words occur more than 30 times in the Gregg text; 95 occur more than 30 times in the South-Western text. After the first 200 most frequently used words, few words are added to the "above 30" frequency.

Words with 1-5 occurrences in the entire textbook represent 298 of the 1,000 words used in the Gregg textbook and 193 of the 1,000 words used in the South-Western textbook. Words with 6-10 occurrences in the entire textbook represent 201 of the 1,000 words used in the Gregg textbook and 273 in the South-Western textbook. More than half of the 1,000 most frequently used words that occur in the Gregg textbook occur 10 or fewer

Table 6.9. Total-Copy Occurrences of the First 1,000 Mellinger Words[a] in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Cumulative Word Groups

Cumulative Word Groups	1 - 5		6 - 10		11 - 15		16 - 20		21 - 25		26 - 30		above 30	
	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western	Gregg	South-Western
10	-	-	-	-	-	-	-	-	-	-	-	-	10	10
50	-	-	-	-	-	-	-	-	-	-	-	-	50	50
100	-	-	-	-	1	1	2	-	3	-	1	4	93	95
200	3	1	8	6	9	8	17	10	14	12	11	18	138	145
300	15	4	28	25	23	32	28	32	25	24	20	29	159	154
400	39	16	50	48	39	62	43	48	31	34	24	33	167	159
500	74	31	70	75	58	92	49	62	38	40	28	36	170	163
600	107	51	99	107	72	115	57	76	43	44	29	37	175	169
700	144	80	135	151	83	127	61	85	44	47	32	37	177	171
800	199	111	160	199	88	139	65	89	45	49	34	38	178	171
900	244	157	183	233	99	149	70	94	47	49	34	40	178	171
1000[c]	298	193	201	273	114	165	72	99	49	50	36	41	179	172

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]The word club appeared twice on the Mellinger list; the second occurrence, No. 816, was deleted, resulting in 999 total words.

times (499 of 949). Over 60 percent of the 1,000 words presented in the textbooks of both systems occur 15 or fewer times: Gregg, 64.59 percent (613 of 949); South-Western, 63.54 percent (631 of 993). In the Gregg textbook, 18.86 percent (179 of 949) of the 1,000 words used in the textbook occur more than 30 times. In the South-Western textbook, 17.32 percent (172 of 993) of the 1,000 words used in the textbook occur more than 30 times.

Point of Introduction

Early introduction of the first 1,000 Mellinger words in the textbook was considered a positive factor as early introduction of the words would provide more opportunity to practice the shorthand outlines. A procedure was developed to study the points of introduction of the 1,000 words in the textbooks of the two systems. As the point of introduction--the first exposure of the student to the word--was being considered, the actual total-copy word number of the appearance was recorded. The point of introduction for each word as it appeared in the textbooks of the two systems was translated into a ratio with a range of zero to two. Values toward two indicated an earlier introduction in the Gregg text, and values toward zero indicated an earlier introduction in the South-Western text. The value of one indicated a nonoccurrence of a word or the common introduction point of a word. (The value of one is indicated by "μ" in the tables.) The use of a ratio allowed the non-introduction of a word to be recorded and weighed into the analysis. Fifty of the first 1,000 words are not used in the Gregg text, and six are not used in the South-Western text. The ratio also weighed the late introduction of a word toward the end of the textbook proportionately.

The average points of introduction ratios for the first 1,000 Mellinger words in the Gregg DJ and the SW Century 21 shorthand textbooks are presented in Table 6.10 by cumulative word groups. This table represents all the 1,000 words and weighs in the nonoccurrence of a word.

Within the first 50 Mellinger words, representing 48.07 percent of written business office communications, the words occur on the average slightly earlier in the South-Western textbook than in the Gregg textbook (Mean = .9876). The probability level for this group indicates that with the 50 words, an earlier Gregg introduction would occur in 49.20 percent of the words. The first 50 words contain a large proportion of memory words in each system (Gregg 33; SW 34). Introduction of the memory forms in the South-Western text begin with Lesson 1. The 214 South-Western memory-form words are completed by Lesson 18. Memory-form words are introduced in the Gregg text at a slower pace with the introduction of the 148 memory-form words beginning in Lesson 3 and concluding in Lesson 33. At least one lesson occurs between each lesson introducing Gregg memory forms. Memory forms are introducted in each succeeding lesson in the South-Western text except for each fourth-lesson review cycle.

Beyond the 50-word group, the words are introduced on the average earlier in the Gregg text than in the South-Western text. The average cumulative word introduction ratio for the first 1,000 words is 1.0825 (standard deviation = 0.6215) indicating an earlier introduction in the Gregg text. This ratio included zeros added to the Gregg system to indicate nonoccurrence of shorthand words missing from the text.

Table 6.10. Average Point of Introduction Ratio for the First 1,000 Mellinger Words[a] in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Cumulative Word Groups

Cumulative Word Groups	Cumulative Introduction Ratio	Mean Introduction Ratio	Standard Deviation	$\frac{\bar{X} - \mu}{s}$*	Level of Probability
10	6.5702	.6570	0.6288	-.5455	.2912
50	49.3788	.9876	0.6578	-.0189	.4920
100	103.3098	1.0331	0.6417	+.0516	.5199
200	215.9255	1.0796	0.6384	+.1247	.5478
300	336.4381	1.1217	0.6508	+.1870	.5754
400	442.4704	1.1062	0.6339	+.1675	.5675
500	544.7243	1.0894	0.6323	+.1414	.5557
600	650.8201	1.0847	0.6296	+.1345	.5517
700	757.8095	1.0826	0.6212	+.1330	.5517
800	866.9533	1.0837	0.6203	+.1349	.5517
900	967.0438	1.0745	0.6204	+.1201	.5478
1000	1082.5491	1.0825	0.6215	+.1328	.5517

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

*Where $\mu = 1$.

The probability level for the cumulative 1,000-word group indicates that, on the average, 55 out of every 100 words within the most frequently used 1,000 words are introduced at an earlier point in the Gregg textbook than in the South-Western textbook. Appendix F contains sample computer printout pages of this procedure.

To eliminate the effect of nonoccurrence words on the cumulative word introduction ratios, a second computer run was made eliminating words that did not occur in either or both systems. The results of the second computer run are summarized in Table 6.11. The values remain the same through the first 200-word groups as both systems used all the first 200 words in their textbooks. After the first 200 words, the cumulative word units indicate a slightly higher probability of early occurrence of words in the Gregg text when nonoccurrence words of either system are eliminated (Probability .5910 nonoccurrence words deleted; .5517 with nonoccurrence words). These probability levels are not significant at the level reported for the study.

Absolute Deviations from Adjusted Mellinger Frequencies

As the Mellinger high-frequency word list was selected as the measure of words as they occur in written business office communications, a procedure was devised to determine the relationship of the use of the 1,000 words in the textbooks to the Mellinger word usage. Two problems existed in comparing the shorthand textbooks: both systems had words from the Mellinger 1,000 words missing from their textbooks, and the textbooks were not of the same shorthand-countable word lengths.

Table 6.11. Average Point of Introduction Ratios for the First 1,000 Mellinger Words[a] that Appeared in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Cumulative Word Groups

Cumulative Word Groups	Words Appeared[c]	Cumulative Introduction Ratio	Mean Introduction Ratio	Standard Deviation	$\frac{\bar{X} - \mu}{s}$*	Level of Probability
10	10	6.5702	.6570	0.6288	-.5455	.2912
50	50	49.3788	.9876	0.6578	-.0189	.4920
100	100	103.3098	1.0331	0.6417	+.0516	.5199
200	200	215.9255	1.0796	0.6384	+.1247	.5478
300	298	336.4381	1.1290	0.6465	+.1995	.5793
400	393	442.4704	1.1259	0.6220	+.2024	.5793
500	487	543.7243	1.1165	0.6168	+.1888	.5754
600	582	649.8201	1.1165	0.6109	+.1907	.5754
700	675	754.8095	1.1182	0.5981	+.1976	.5793
800	766	859.9533	1.1227	0.5924	+.2071	.5832
900	852	957.0438	1.1233	0.5878	+.2097	.5832
1000	946	1072.5491	1.1338	0.5872	+.2279	.5910

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]Fifty-four total missing words: 50 missing Gregg words; 6 missing South-Western words (3 words in common missing); Word No. 816 club deleted (1 word).

*Where $\mu = 1$.

The total-copy textbook frequencies of the 1,000 words were converted to percentages and the percentages compared against an adjusted Mellinger frequency percentage. An absolute percentage deviation was obtained between the textbook usage and the Mellinger usage. The difference between the percentage deviations of both systems were compared.

As the shorthand textbooks had been keypunched in shorthand-countable words, the entire Mellinger frequency list of 12,897 separate words was adjusted to correspond to textbook keypunching procedures. Primarily, the frequencies of hyphenated expressions and possessives were converted to shorthand-countable words. Frequencies were added to the total Mellinger frequencies and to the affected words within the 1,000 word list. This procedure added 1,271 frequencies to the Mellinger total word occurrences. The adjusted Mellinger percentages were then determined for each of the 1,000 words.

To determine the difference between the use of the word in the textbook and in the adjusted Mellinger listing, absolute percentage deviations were determined. Absolute percentage deviation represents the absolute difference between the percentage of use of the 1,000 words in the textbook compared with the percentage of use of the 1,000 words in written business office communications as indicated by the adjusted Mellinger listing. Either too little or too great a use of a word would not correspond to the high-frequency word usage as reported by Mellinger and would represent a disproportionate use of that word. If a word did not occur in the text, the absolute percentage deviation became the adjusted Mellinger percentage minus zero (nonoccurrence). This figure represented the weight or importance of the word in business correspondence.

The absolute percentage deviations of the textbook use of the first 1,000 words was compared against the adjusted Mellinger percentage for each system by the cumulative word groupings. The results of this analysis are summarized in Table 6.12. As all 1,000 words are included in this table, the impact of the missing words from each text (Gregg 50; SW 6) is built into the procedure.

The adjusted Mellinger percentage by cumulative word groups is presented along with the total textbook percentage of the words by the cumulative word groups. The absolute percentage deviation of each word in each system's textbook from the adjusted Mellinger percentage is summarized by the cumulative word groups. The standard deviations of the percentage deviations of each system are presented along with the corresponding t values for the cumulative word groups.

No significant difference occurred between the absolute deviations of the words in each textbook for the first ten Mellinger most frequently used words. Although both systems deviate from what is found in business communications, as measured by the adjusted Mellinger frequency, the difference between the means of the deviations of the two system was insignificant. The first ten words represent 21.6952 percent of the Gregg textbook and 22.5921 percent of the South-Western textbook. These words represent 25.9234 percent of the adjusted Mellinger frequency.

The 100-word group represents 55.3064 percent of the written business office communications as measured by the adjusted Mellinger frequency. The 100 words as used in the textbooks of each system represent 51.7315 percent of the total Gregg shorthand-countable textbook words and 48.7975 percent of the total South-Western shorthand-countable textbook words.

Table 6.12 Absolute Percentage Deviations from Adjusted Mellinger Percentages for the First 1,000 Mellinger Words[a] in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Cumulative Word Groups

Cumulative Word Groups	Adjusted Mellinger Percentage	Textbook Percentage		Absolute Percentage Deviation		Standard Deviation		t Value
		Gregg	Western	Gregg	Western	Gregg	Western	
10	25.9234	21.6952	22.5921	6.6760	4.5853	0.6174	0.4438	0.8694
50	47.7833	44.1847	41.9418	14.6940	10.5093	0.3590	0.2525	1.3481
100	55.3064	51.7315	48.7975	17.9895	13.6053	0.2804	0.1994	1.2740
200	63.0816	59.3197	55.8485	21.8681	16.9139	0.2117	0.1517	1.3448
300	67.4280	63.7594	59.5388	24.6386	18.7434	0.1776	0.1282	1.5506
400	70.5505	66.5566	62.3965	26.5563	20.2250	0.1563	0.1131	1.6399
500	73.0781	68.6863	64.9338	28.1094	21.4711	0.1413	0.1025	1.6994
600	75.2081	70.8572	67.2525	29.5541	22.6028	0.1301	0.0944	1.7648
700	76.9765	72.4875	69.0644	30.6686	23.5153	0.1212	0.0881	1.8035
800	78.5273	73.8248	70.5894	31.6951	24.2069	0.1140	0.0829	1.8777
900	79.9107	75.0750	71.9731	32.6317	24.9362	0.1079	0.0785	1.9216
1000	81.1617	76.5176	73.5446	33.7469	25.7009	0.1027	0.0748	2.0020[c]

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[c]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]Significant at .05 level (1.960 required).

No significant difference occurs between the means of absolute percentage deviations of the two systems in the first 500 most frequently used words. Thus, the proportion of usage of the first 500 words in the textbooks of each system does not deviate significantly.

At the 1,000-word level, the mean difference between the absolute percentage deviations of the words occurring in the textbooks and the words as they occur in written business office communication is significant (t value = 2.0020). Thus, within the first 1,000 Mellinger words, 5 chances in 100 exist that the deviations from the model may be due to chance alone and not attributable to differences between the systems.

The average per word percentage deviation of the 1,000 words as used in the textbook compared with the 1,000 words used in written business office communication in Gregg is 0.0337 percent and in South-Western is 0.0257 percent per word. As this difference is significant at the .05 level, .95 probability exists that the South-Western textbook usage of the high frequency words corresponds more nearly to the Mellinger adjusted model than does the Gregg textbook usage.

The 1,000 words appearing in the textbooks of both systems account for over seventy percent of the lesson-structured, shorthand-countable textbook words: Gregg, 76.5176 percent; and South-Western, 73.5446 percent. The 1,000 adjusted Mellinger words account for 81.1617 percent of the written business office communications. Thus, even though the occurrences of the 1,000 words in the Gregg text produce a closer percentage of use to the 1,000 Mellinger word percentage (76.5176), the absolute

percentage deviation of the individual words from the adjusted Mellinger percentage indicate that the South-Western textbook usage of the 1,000 words more nearly follows the Mellinger usage than does the Gregg textbook usage. Appendix F contains sample computer printout pages of this procedure.

A second computer run was made of the data excluding words in either system which did not occur in the textbooks. The differences between these runs indicate the impact of the missing words. The results of omitting these words are presented in Table 6.13. The absolute percentage deviation from the adjusted Mellinger percentage of those words occurring in the textbooks of each system was determined by cumulative word groups. As all the first 200 words occurred in the textbooks of both systems, the data presented in the word groups to the 200-word cumulative group is the same as summarized in Table 6.12.

The adjusted Mellinger percentage and the textbook percentages reported for each of the cumulative groups is the same as occurs in Table 6.12. Elimination of the nonoccurrence words in the textbooks caused the confidence level to be lowered, however. For the 1,000 words, the difference between the means of the absolute percentage deviations is not significant at the .05 level reported for Table 6.12 containing the entire 1,000 words. By eliminating the nonoccurrence words, the average percentage deviation per word for the 1,000 words from the adjusted Mellinger percentage is 0.0346 percent per word for Gregg (32.7558 ÷ 946) compared with 0.0266 per word for South-Western (25.1850 ÷ 946).

Table 6.13. Absolute Percentage Deviations from Adjusted Mellinger Percentages for the First 1,000 Mellinger Words[a] Appearing in the Gregg DJ and SW Century 21 Shorthand Textbooks[b] by Cumulative Word Groups

Cumulative Word Groups	Words Appeared[c]	Adjusted Mellinger Percentage	Textbook Percentage		Absolute Percentage Deviation		Standard Deviation		t Value
			Gregg	Western	Gregg	Western	Gregg	Western	
10	10	25.9234	21.6952	22.5921	6.6760	4.5853	0.6174	0.4438	0.8694
50	50	47.7833	44.1847	41.9418	14.6940	10.5093	0.3590	0.2525	1.3481
100	100	55.3064	51.7315	48.7975	17.9895	13.6053	0.2804	0.1994	1.2740
200	200	63.0816	59.3197	55.8485	21.8681	16.9139	0.2117	0.1517	1.3448
300	298	67.3386	63.7594	59.5039	24.5392	18.6889	0.1782	0.1286	1.5417
400	393	70.3074	66.5566	62.2781	26.3132	20.1003	0.1577	0.1140	1.6101
500	487	72.6904	68.6863	64.7242	27.7217	21.2718	0.1432	0.1038	1.6522
600	582	74.7179	70.8572	66.9342	29.0639	22.3649	0.1320	0.0958	1.7019
700	675	76.3648	72.4853	68.6763	30.0591	23.2213	0.1234	0.0896	1.7253
800	766	77.7779	73.8139	70.1314	30.9566	23.8448	0.1164	0.0846	1.7850
900	852	78.9818	75.0641	71.4142	31.7137	24.4554	0.1108	0.0806	1.8143
1000	946	80.1597	76.5067	72.9081	32.7558	25.1850	0.1055	0.0768	1.8857[d]

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

[c]Fifty-four total missing words: 50 missing Gregg words; 6 missing South-Western words (3 words in common missing); Word No. 816 club deleted (1 word).

[d]Not significant at the .05 level (1.960 required).

C. CHAPTER SUMMARY

The beginning college-level textbooks of Gregg DJ shorthand and SW Century 21 shorthand were described in this chapter. The use of the first 1,000 Mellinger words in the textbooks was analyzed.

The Gregg shorthand principles are introduced by Lesson 47 in the Gregg text and by Lesson 33 in the South-Western textbook. Each book provides three major emphases on principles: the introduction cycle, a long second review, and a shorter third review cycle. The memory forms of the Gregg system are completed by Lesson 33 and by Lesson 18 in South-Western. The memory forms in South-Western are introduced at a faster pace than in the Gregg text. Abbreviated words of Gregg are introduced in one lesson, whereas in South-Western the contracted/correspondence forms are presented one or two words at a time beginning in Lesson 13 and continuing until late in the text beyond the initial theory presentations. Four of the contracted words in SW Century 21 shorthand are not present in the South-Western textbook. Both systems have additional instructional aids to facilitate the learning and teaching of the shorthand.

The analysis of the 1,000 words in the lesson-structured textbook copy of the two systems included determination of the Mellinger words listed and used in the textbooks, the place of the word introductions, frequencies of occurrences of the words in the textbooks, points of introduction of the words, and the absolute percentage deviation of the words from an adjusted Mellinger frequency.

The shorthand-countable words of the textbooks were keypunched onto data cards with three separate tallies kept: connected-copy words, presented words, and total-copy words.

Fifty of the 1,000 Mellinger words are not used in the Gregg DJ textbook, and six are not used in the South-Western textbook. All the memory words of the two systems presented in the 1,000 Mellinger words are used in the individual textbooks.

With respect to the place of introduction of the 1,000 words, as viewed by the cumulative word groups, methods of writing, and principles, the greater portion of the words are introduced in presented-word copy in the South-Western text. With the place of introduction of the words in the Gregg text, slightly more (478 compared with 471) of the 1,000 words as listed in the word groups, are introduced in the presented words. The methods of writing introduction and principles introduction indicate the greater portion of introductions in the Gregg text occur in the connected copy. The memory forms of both Gregg DJ and SW Century 21 are introduced in the presented words of the individual textbooks.

The Gregg DJ textbook contains 46,967 shorthand-countable words in the lesson-structured copy of the textbook and the South-Western textbook contains 51,536 shorthand-countable words. More than half the 1,000 Mellinger words used in the presented words of the textbook occur once. The first 50 words occur more than 30 times in the separate textbooks. Overall, of the 1,000 words used in the textbook of each system, over 60 percent (Gregg, 64.59 percent; SW, 63.54 percent) occur 15 or fewer times.

A ratio was used to analyze the average points of introduction of the Mellinger words in each textbook. The procedure provided for the nonoccurrence of words in both textbooks and the early or late introduction of the words in the texts. For the 1,000 words, the average

point of introduction ratio of 1.0825 indicates an earlier introduction of words in the Gregg text. The probability level for this occurrence was .5517. When the nonoccurrence words were eliminated, the probability level rose slightly to .5910 (mean introduction ratio = 1.1338).

To determine how nearly the 1,000 word usage in the textbooks corresponded to the business communication in the Mellinger findings, the absolute percentage deviation from an adjusted Mellinger frequency was computed. For the entire 1,000 words, the use of the words in the South-Western text more nearly followed the Mellinger model (.05 level of significance). When the nonoccurrence words were eliminated, the difference between the average absolute percentage deviations was not significant.

CHAPTER VII

SUMMARY

A summary of the statement of the problem and procedures, findings, conclusions, and recommendations are presented in this chapter.

A. PROBLEM AND PROCEDURES

The problem of this study was to compare the descriptive characteristics and memory load of Gregg DJ shorthand and SW Century 21 shorthand. The systems were compared by the identical, similar, and unique descriptive characteristics. The memory loads were compared using high-frequency words, running shorthand-countable words, and the textbook usage of high-frequency words. The memory load was defined as the fundamentals of the shorthand system beyond the shorthand alphabet letters (single-letter vowel, consonant, and consonant digraph symbols) which have to be memorized to enable one to read and write the shorthand accurately. Memory load was discussed in terms of decision points--any facet in the construction of the shorthand outline that requires knowledge beyond the shorthand alphabet letters (single-letter vowel, consonant, and consonant digraph symbols) to construct a dictionary-correct outline. The memory load definition was interpreted to include the memory forms and derivatives, abbreviated/contracted words and derivatives, and textually declared and undeclared principles comprising the shorthand system.

The study was divided into four major phases: description of the shorthand systems, anlaysis of the 1,000 Mellinger words, analysis of 3,000 running shorthand-countable words, and analysis of the textbook

usage of the 1,000 words. The procedures in each phase are briefly discussed.

Shorthand Systems' Description Procedure

The beginning college-level textbooks of Gregg DJ shorthand and SW Century 21 shorthand were inspected to obtain a listing of textually declared principles. A textually declared principle was defined as those appearing in the beginning shorthand textbook or in the basic shorthand dictionary of the system. All other sources and observations were classified as undeclared principles. The principles were then cataloged by major theory groups. Within each theory group, principles were classified as identical, similar, or unique to the systems.

During this phase of the study, the tally of decision points was determined. Decision points at the principles level were determined by comparing the phonetics of the outlines and the principles within written shorthand outlines. If a dictionary-correct outline could not be written without knowledge of the principle or if an alternative outline could be written without knowledge of the principle, a decision point was defined as occurring. The decision points were tallied in the determination of the memory load.

The systems were described by their shorthand alphabets, memory forms, abbreviated/contracted words, and textually declared and undeclared principles. A tabular summary was made of the system-wide application of the textually declared and undeclared alphabets, principles, and penmanship guidelines by their identical, similar, and unique relationships in Gregg DJ and SW Century 21 shorthand. A detailed comparison of the principles of the systems is included in Appendix D.

Analysis of the First 1,000 Mellinger Words Procedure

The first 1,000 most frequently used words as listed by Mellinger were analyzed for the study. The first 1,000 words were typed on recording forms, and the shorthand outlines for each word written. The Mellinger frequency, syllabic intensity, stroke count, methods of writing, and textually declared and undeclared principles were recorded for each word. Two levels of analysis occurred: methods of writing and textually declared and undeclared principles. Each level was described by frequency, syllabic intensity, and stroke count. A cross comparison of syllabic intensity and stroke count of the systems was made at the 100, 500, and 1,000 cumulative-word groups. A model was developed for each system based upon a weighted Mellinger frequency of the methods of writing and principles used in each system. These analyses were completed using a PL/1 computer program. A computerized listing was obtained of the words by methods of writing and principles used.

Statistical analysis of the data included the chi-square test, the Significance of a Difference Between Proportions test, and the *t* test.

Analysis of Running Shorthand-Countable Words Procedure

The purpose of this phase of the study was to observe the differences between the systems on the basis of running, or continous, copy. Letters of 100-125 words were selected from typewriting textbooks of the two sponsoring publishing companies using a table of random numbers. Three thousand shorthand-countable words (word or number must contain a shorthand character) were selected. A computer listing was obtained of

the words in the running copy not in the first 1,000 Mellinger words. These additional words were coded by the procedures established for the 1,000 Mellinger words analysis. Additional coding procedures were established to accommodate the differences between systems in constructing two-part city names as well as dual outlines for the words cents and percent.

Frequency rankings of the methods of writing and the principle groupings were obtained for each successive 100 words within the 3,000 word copy. All groups were stabilized in Gregg DJ by 2,500 running words and in SW Century 21 by the first 500 running words.

A computer listing was obtained of the methods of writing and principles used in the words as written in shorthand in each system. A PL/1 computer program was written to analyze the data at the methods of writing level and the principles level. In each level, the frequency, syllabic intensity, and stroke count were calculated. A cross comparison was made of the syllabic intensity and stroke count for the 3,000 words. The chi-square test, the Significance of a Difference Between Proportions test, and the t test were used to interpret the data.

Analysis of the Shorthand Textbook Procedure

The beginning college-level textbooks of Gregg DJ and SW Century 21 shorthand were analyzed by the textbook usage of the first 1,000 Mellinger words. The two shorthand textbooks were keypunched in shorthand-countable words; nonshorthand words were eliminated. A computer program was written to tabulate three tallies: presented words, connected copy, and total-copy words. Hyphenated compound modifiers were punched as separate words,

and the possessive form of words on the 1,000 word list was punched as plural words to reflect the shorthand outline. A PL/1 computer program was written to acquire the occurrences of the three running tallies in the lesson-structured copy, places of word introductions in the presented words or connected-copy words, and the points of introduction (actual word number in the total-copy tally). This information was stored from the initial computer runs to provide the data base in obtaining the points of introduction ratio and the absolute deviations from adjusted Mellinger frequencies.

A point of introduction ratio was established for each of the 1,000 Mellinger words as they first appeared in the textbooks of the two systems. The use of the ratio allowed nonoccurrence words to be weighed into the analysis as well as weighing the late introduction of a word proportionately. To determine the impact of missing words, a second computer run was made deleting nonoccurrence words in either system. Results were reported by probability levels.

The relationship of the textbook usage of the 1,000 Mellinger words was compared with the written office business communication usage of the words. Two problems existed in comparing the textbooks: both systems had words from the Mellinger 1,000 words missing from their textbooks, and the textbooks were not of the same word lengths. The total-copy textbook frequencies were converted into percentages and the percentages compared against an adjusted Mellinger frequency. The entire listing of Mellinger words was converted to shorthand-countable words to match the textbook keypunching procedures. Absolute percentage deviations from the adjusted Mellinger percentages were obtained. If a word did not

occur in the textbook, the absolute percentage deviation became the adjusted Mellinger percentage minus zero, nonoccurrence. The results were summarized by cumulative word groups with *t* values determined for each group. To determine the effect of the nonoccurrence words, a second computer run was made deleting the nonoccurrence words in either system.

B. FINDINGS

Pertinent findings of the study are presented by the four phases: of the study: description of the systems, analysis of the first 1,000 Mellinger words, analysis of 3,000 running shorthand-countable words, and analysis of the textbook usage of Mellinger's 1,000 most frequently used words.

Description of the Systems

1. Seventy-five percent of the textually declared alphabetic components of one system could transfer to the other system.

2. With knowledge of Gregg DJ brief forms, the Gregg writer knows 15.88 percent of the SW Century 21 speedforms (identical outlines). With knowledge of SW Century 21 speedforms, the South-Western writer knows 22.97 percent of the Gregg DJ brief forms.

3. Of the 246 textually declared and undeclared elements (alphabets, principles, and penmanship guidelines) identified for Gregg DJ shorthand, 70, 28.46 percent, are identical to SW Century 21 shorthand; 62, 25.20 percent, are similar; and 114, 46.34 percent, are unique.

4. Of the 200 textually declared and undeclared elements (alphabets, principles, and penmanship guidelines) identified for SW Century 21 shorthand, 72, 36.00 percent, are identical to Gregg DJ shorthand; 62, 31.00 percent, are similar; and 66, 33.00 percent, are unique.

First 1,000 Mellinger Words

1. Gregg DJ uses 1,077 methods of writing in constructing the 1,000 Mellinger words; SW Century 21 uses 1,124. From the four methods of writing groups, the abbreviated/contracted and memory forms are added to the memory component (G 200; SW 312).

2. The two systems use significantly different patterns of outline construction in writing the first 1,000 words as determined by the chi-square test. Gregg uses proportionally fewer memory words than South-Western (G .1838; SW .2705) and proportionally more theory words than South-Western (G .4968; SW .4351). As the word base is extended to the first 1,000 words, the proportion of memory words in both systems declines while the proportion of shorthand theory words increases.

3. Of the 170 decision-point principles identified in Gregg DJ shorthand, 122 are used within the first 1,000 words. Of the 122 decision-point principles identified in SW Century 21 shorthand, 87 are used within the first 1,000 words (T = .0835). Twenty-eight percent (G 28.24; SW 28.69) of the principles identified in both systems are not used within the first 1,000 words.

4. At the principles level, 2,152 decision points are used to write the 1,000 words in Gregg DJ shorthand; 1,630 decision points are used to write the SW Century 21 shorthand outlines. In the first 100 Mellinger words, 3.86 percent of the Gregg DJ decision points associated

with the system's principles occur; 3.74 percent of the SW Century 21 principles occur. Within the first 500 words, 41.54 percent of the Gregg DJ decision points associated with the system's principles occur; 39.08 percent of the SW Century 21 principles occur.

5. The use of the principles within the theory categories differ significantly in writing the first 1,000 Mellinger words as indicated by the chi-square test. The differences in the consonants, vowels, word endings--disjoined, and word endings--joined contribute substantially to the difference in use between the systems.

6. The larger frequency differences of the theory categories are summarized below:

a. The use of the South-Western -ed principle reduces the South-Western frequencies in the dd, dt, td principle and the nd, nt, nv principle compared with the frequency of those principles in Gregg.

b. Nineteen of the 24 Gregg DJ consonant frequencies are the result of provisions for the w sound.

c. The SW Century 21 short i sound (body of word) principle accounts for 78.86 percent (97 of 123) of the SW Century 21 vowel frequencies.

d. The decision points in the Gregg DJ con-, com-, re-, em-, en-, and un- principles account for 62 of the 74 greater frequency differences in the joined word beginnings.

e. Twenty-two disjoined word ending principles were identified for SW Century 21, 14 for Gregg DJ. The major portion of the 98 additional South-Western frequencies is the result of the -ed word ending (71 occurrences).

f. Twenty-four joined word ending prnciples were identified in Gregg DJ; 14 in SW Century 21. The -tion Gregg principle accounts for 59 of the greater 107 Gregg DJ frequencies in this category. The -tion endings is written as an alphabetic combination in SW Century 21.

g. The joinings (textually declared) category represents the largest frequency in both systems: 1,094, Gregg DJ; and 761, SW Century 21. Of the 1,094 Gregg DJ joining frequencies, 674, 61.61 percent, involve the writing of circle vowels. Of the 761 SW Century 21 joining frequencies, 601, 78.98 percent, involve the writing of circle vowels. Decisions concerning the line placement of outlines in South-Western involve 12.88 percent (98 occurrences) of the joining decisions and 2.10 percent (23 occurrences) in Gregg. The joining of left s or comma s in Gregg DJ involves 348 occurrences, 31.81 percent of the textually declared joining frequencies.

h. In the undeclared category, the Gregg DJ undeclared vowels involve 87, 24.65 percent, of the 353 textually undeclared decision points. Gregg DJ undeclared joining decisions involve 204, 57.79 percent, of the undeclared frequencies. Of the 269 textually undeclared decision points for SW Century 21 shorthand, 170, 63.20 percent, involve joining decisions. Of these 170, 116, involve decisions on the writing and placement of circle vowels (including No. 068). These 116 decisions account for 7.12 percent of the total SW Century 21 decision points (116 ÷ 1,630) at the principles level.

i. The textually declared (348) and textually undeclared (81) occurrences of principles regarding the joining of comma s or left s account for 429, 19.93 percent, of the total 2,152 decisions at the principles level in Gregg DJ.

7. At the 100-word level, no significant difference occurs between average stroke counts. At both the 500-word (G 3.614; SW 3.340) and the 1,000-word level (G 4.075; SW 3.876), the difference is significant at the .01 level.

8. The total components of the memory load comprise 2,352 elements for Gregg DJ and 1,942 for SW Century 21. Thus, the SW Century 21 writer makes 82.57 percent (1,942 ÷ 2,352) as many decisions as the Gregg DJ writer makes beyond the basic shorthand alphabet in writing the first 1,000 Mellinger words.

Running Shorthand-Countable Words

1. Gregg DJ uses 3,162 methods of writing in constructing the 3,000 running shorthand-countable words; SW Century 21 uses 3,226. From the methods of writing group, the memory, memory derivatives, and abbreviated/contracted words are added to the memory component (G 1,382; SW 1,321) As indicated by the chi-square test, the two system differ significantly in the patterns of use of the methods of writing in constructing the shorthand outlines for the 3,000 words.

2. Both systems use 81 percent (G 81.18; SW 81.15) of the decision-point principles identified for their system in writing the 3,000 words. SW Century 21 uses 71.74 percent (G 138; SW 99) the principles that Gregg DJ does. At the principles level, 3,726 decision points are used to write the 3,000 running-copy words in Gregg DJ, 2,817 decision points are used in writing the SW Century 21 outlines. The system differ significantly in the use of the principles within the theory categories to construct the 3,000 running shorthand-countable words.

3. Gregg DJ uses proportionally more consonants, joined word beginnings, joined word endings, joinings, and undeclareds than SW Century 21. SW Century 21 uses proportionally more bends and blends, vowels, disjoined word endings, and miscellaneous principles that Gregg DJ

4. The average stroke by syllabic intensity of the words in the 3,000 running words indicates a statistically significant average of 2.775 strokes for Gregg DJ and 2.680 for SW Century 21. When stroke counts for capitalization are added, the average for Gregg DJ becomes 2.886; and for SW Century 21, the average becomes 2.709.

5. The total components of the memory load in writing 3,000 running shorthand-countable words comprise 5,117 elements for Gregg DJ and 4,138 for SW Century 21. Thus, the SW Century 21 writer makes 80.87 percent (4,138 + 5,117) as many decisions as the Gregg DJ writer makes beyond the basic shorthand alphabet in writing the 3,000 words.

Textbook Usage of the 1,000 Mellinger Words

1. Fifty of the first 1,000 Mellinger words are missing from the Gregg DJ textbook; six from the SW Century 21 textbook. The difference in proportion of words used in the texts is significant beyond the .001 level (T = 6.000).

2. All the contracted words, speedforms, and speedform derivatives of SW Century 21 shorthand present in the 1,000 Mellinger words are used in the South-Western textbook. All the abbreviated words and brief forms of Gregg DJ shorthand present in the 1,000 Mellinger words are used in the Gregg textbook. Eight of the 77 brief form derivatives do not occur in the Gregg textbook.

3. Of the first writing of the 1,000 words that appear in the textbooks (G 949; SW 993), Gregg uses 92.33 percent (1,987 of 2,152) and SW Century 21 uses 99.26 percent (1,618 of 1,630) of the total frequencies of the principles used in writing the first 1,000 words.

4. The place of word introductions reflects the difference in textbook format. Of the first 1,000 Mellinger words used in each textbook, 70.29 percent (698 of 993) South-Western introductions are in presented words; 50.37 percent (478 of 949) Gregg introductions are in presented words. All memory forms are introduced in the presented words of the respective texts. More memory derivatives, however, are introduced in connected copy in both systems than in presented words. Of the words used in the Gregg text, more alphabetic words and theory words are introduced in connected copy, whereas in South-Western more of these words are introduced in the presented words. At the principles level, the place of word introductions summarized by theory categories indicates the greater portion of words is introduced in the connected copy in Gregg, 58.63 percent, and the greater portion in the presented words in SW Century 21, 68.62 percent.

5. The 51,536 total shorthand-countable words in the SW Century 21 text are divided between 4,569, 8.87 percent, in presented words and 46,967, 91.13 percent, in connected-copy words. The 45,835 total shorthand-countable words in the Gregg DJ text are divided between 3,170, 6.92 percent, presented words and 42,665, 93.08 percent, connected-copy words.

6. Words occurring 1-5 times in the connected copy represent the largest group of occurrences for Gregg DJ (322 words). Words occurring 6-10 times in the connected copy represent the largest group of occurrences for SW Century 21 (276 words). More than half the words in both systems used in presented copy occur once. In the total textbook copy, the first 50 words occur more than 30 times in each system's textbook. Within the first 200-word group, 137 of Gregg's words and 141 of South-Western's words occur more than 30 times. More than half of the 1,000 words occurring in the Gregg textbook occur 10 or fewer times (499 of 949). Over 60 percent of the 1,000 words presented in the textbooks of both systems occur 15 or fewer times: Gregg DJ, 64.59 percent; SW Century 21, 63.54 percent.

7. The probability is .5517 that the 1,000 words are introduced earlier in the Gregg DJ textbook than in the SW Century 21 textbook. When the nonoccurrence words are eliminated, this probability increases slightly to .5910.

8. At the 1,000-word level, use of the words in the SW Century 21 textbook more nearly follows the Mellinger occurrences in written businexx office communications (significant at .05 level). When nonoccurrence words are dropped from the absolute deviation analysis, the difference between the means of the absolute deviations is not significant.

9. The first 1,000 words account for 76.5176 percent of the Gregg DJ textbook and 73.5446 percent of the SW Century 21 textbook.

C. CONCLUSIONS

Based on the findings of this study, the following conclusions related to the statement of the problem are made:

1. The knowledge of one shorthand system (Gregg DJ or SW Century 21) contributes substantially to the acquisition of knowledge in the other system as reflected in similarities of memory words, shorthand alphabetic components, and textually declared and undeclared principles.

2. Within the first 1,000 Mellinger words, the memory load as defined in this study is lower for SW Century 21 shorthand than for Gregg DJ shorthand. The lower memory load is accomplished without an increase in the average shorthand stroke count.

3. Within the 3,000 running shorthand-countable words, the memory load as defined in this study is lower for SW Century 21 shorthand than for Gregg DJ shorthand. The lower memory load is accomplished without an increase in the average shorthand stroke count.

4. The SW Century 21 beginning college-level shorthand textbook provides better utilization of the entire 1,000 Mellinger word list than does the Gregg DJ beginning college-level shorthand textbook. Of those words from the Mellinger list that appear in the textbooks of the two systems, however, no distinguishable differences occur in their textbook use.

D. RECOMMENDATIONS FROM THE STUDY

Recommendations for the use of the data in the study include:

1. The description of the systems in Appendix D may be used as a study guide to the similarities and differences between the systems.

2. The two models translating the percent of Mellinger frequencies into the percent of use of each system at the first 100-, 500-, and 1,000-word levels provide guidelines for developing shorthand copy in both systems at three levels of use in written business office communications.

3. As the 1,000 words represent 76.5176 (Gregg) and 73.5446 (South-Western) percent of the textbook copy of the systems and 28 percent of the principles identified for each system are not used within the 1,000 words, the data provide a guide to those principles within the system that could be emphasized by additionally constructed material.

System and materials recommendations from the study include:

1. SW Century 21: the joining patterns for the initial circle vowels be specified more clearly. Alternative outlines may be constructed by the writer even though the guidelines on consistent, dominant-direction writing are followed. The initial circle vowels required 115 decisions in the first 1,000 words, 7.05 percent, of the total principle frequencies (1,630) of the system.

2. SW Century 21: a chart of the system's contracted words be included in the textbook and the contracted words of the system appear at least once in their basic form. Four of the basic contracted words do not appear in the South-Western text.

3. SW Century 21: the contracted words of the system use the beginning sounds of the word. Contracted words use beginning and subsequent distinctive sounds. Gregg abbreviated words use only the beginning sounds. As the concept behind the abbreviated/contracted words is that the shorthand writer may develop abbreviated/contracted outlines to fit his own

writing repetitions, the suggestion is made the the "subsequent" part of the outline may be dropped to allow more flexibility in the writing situation.

4. Gregg DJ and SW Century 21: each system collect in one document all the textually declared and undeclared principles of its system and make the document available to the teachers. The teacher should be able to explain the construction of each outline in the system's shorthand dictionary by the set of principles the teacher has available.

5. Gregg DJ and SW Century 21: an up-to-date high-frequency word listing be consulted when revisions of textbook materials are planned. As 50 words in the 1,000 Mellinger list are missing from the Gregg textbook and six from the South-Western textbook, the suggestion is made that with new revisions, an up-to-date frequency word list be consulted as an aid to developing practice material for the student in the classroom situation that will be encountered in the employment writing situation.

6. Gregg DJ: the highly used phrasing forms of some frequently phrased outlines be considered as possible brief forms for those words; for example, b for been, a for able, p for hope. Also, the outlines for some complimentary closings could be used within the body of the letters rather than having a second outline for that word, such as: Sincerely yours and sincerely ; Cordially yours and cordially .

E. RECOMMENDATIONS FOR FURTHER STUDY

As a result of this study, further research questions occur:

1. Is there a point of diminishing returns in the reduction of decision points within a system? Does reduction of the decision points

at the encoding stage result in more decision points at the decoding stage? If so, what is the tradeoff between the two? At which stage do more errors occur? Are these errors that affect the final transcribed copy?

2. Do the memory loads of the systems increase proportionally when the base is extended from the 1,000 to the 5,000 most frequently used words? At the principles level, the decision points within the 1,000 words increased after the first 500 words when more theory words were added than in the first 500 words. As the 5,000 words would contain more theory words, the memory loads may be of greater differences when analyzed by decision points.

3. What is the optimum introduction rate for memory words? What is the optimum spread of the memory words in the learning materials of the systems? Considering the total memory words to be learned, does the optimum introduction rate change from system to system? The brief forms in the Gregg DJ textbook are introduced at a general rate of nine outlines every other lesson. The introduction rate of speedforms in the SW Century 21 textbook ranges from 4 to 24 in a lesson. Speedforms are introduced every lesson with the exception of every four-lesson review cycle. What effect does this presentation rate have on the learning and retention of memory forms in the two systems?

4. What are the differences in the phrasing function and patterns of the two systems? What proportion of the phrasing patterns involve words within the 1,000-word group? As the 1,000 words represent 76.5176 percent of the Gregg textbook and 73.5446 percent of the South-Western textbook, further study of the patterns of use of the 1,000 words in the

textbooks can be justified. What phrasing patterns occur most often? How is the stroke count affected? What is the memory load increase by the use of phrasing if the writer follows the suggested phrasing patterns of the system? What phrasing patterns are limited to the use of one system that cannot be used in another system because of structural differences?

5. What is the effect on the Gregg system of eliminating the dual s strokes? As the decisions involving selection of comma s or left s add 18.24 percent (429 of 2,352) to the memory load of Gregg DJ in writing the first 1,000 words, the tradeoff between outline construction facility and joining with that of the added memory load of these strokes could be tested. What would be the impact of one s on the Gregg system?

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APPENDICES

APPENDIX A

MATERIALS USED IN ANALYSIS OF MELLINGER'S 1,000 MOST FREQUENTLY USED WORDS

SHORTHAND STROKE COUNTS FOR GREGG DJ AND SW CENTURY 21

Character	Gregg DJ Symbol	Gregg DJ Str. Cnt.	SW Century 21 Symbol	SW Century 21 Str. Cnt.
Consonants				
b		1		1
d		1		1
f		1		1
g		1		1
h		1		1
j		1		1
k		1		1
l		1		1
m		1		1
n		1		1
p		1		1
r		1		1
s,z		1		1
t		1		1
v		1		1
w		1		1
x		1	+	
Digraphs				
ch		1		1
ng		1		1
sh(zh)		1		1
th		1		1
Vowel Combinations				
a		1		1
e		1		1
i		1		1
o		1		1
u		2		1

Character	Gregg DJ Symbol	Gregg DJ Str. Cnt.	SW Century 21 Symbol	SW Century 21 Str. Cnt.
Vowel Combinations (continued)				
oo		1	+	1
oi,oy		2		2
ow,ou		2		2
Bends and Blends				
ded det,ted (dd,dt,td)*		1		1
dem,tem (dm,dn)*		1		1
den,ten (tm,tn)*		1		1
nd,nt (nd,nt,nv)*		1		1
men,mem (mm,mn)*		1		1
ngk (nk)*		1		1
ld		1		1
def,dif		1	+	
dev,div		1	+	
md,mt		1	+	
rd		1	+	
ses		1	+	
fr	+			1
gr,jr	+			1
Other				
Apostrophe		1		1
Capitalization		3		1
Shorthand Jog		0		0
Pen Lift (within outlines)		1		1

+No separate outline for this character.

*SW Century 21 theory characters.

SAMPLE RECORDING FORM

Word (Frequency)	Symbol G	Symbol S	S.I.	Stroke Count G	Stroke Count S	Alphabetic G	Alphabetic S	Abbre/Contr. G	Abbre/Contr. S	Memory G	Memory S	Prin. G	Prin. S	Short. G	Short. S	Rules Applied G	Rules Applied S
261. assistance-119 W:ə-sis-tənts B:ə-sist-ns			3	4	5									↘	↘	105 111 901 918	109 303 904 909 063 061
262. between-119			2	2	5						↘			↘	↘	105 502	502 909
263. few-119 B:bi-twεn' W:fyü B:fo			1	3	2		↘							↘		302	
264. card-118			1	3	4		↘							↘		110 903	909
265. current-118 W:kər-ənt B:kər-ənt			1	4	4									↘	↘	108 901 904 031	107 909
266. days-118			1	3	3	↘	↘									901 918	909
267. several-118 B:sev-ər-əl			3	3	5		↘			↘						901 912 913	909
268. advise-117 W:əd-vīz B:əd-vīz			2	5	3	↘					↘					901 902 913	909 070
269. back-117			1	3	3	↘	↘									903	909
270. high-117			1	3	3	↘	↘										909
271. pay-117			1	2	2	↘	↘									901	909
272. required-117 W:ri-kwī(ə)r B:ri-kwīr			2	5	5						↘	↘	↘	↘	↘	715 901 903	606 909 051
273. effective-116 W:i-fek-tiv B:ə-fek-tiv			3	5	4	↘					R	↘				901 034 070	613 904 906 909
274. free-116 W:frē B:frē			1	3	2	↘								↘		901	108 909
275. job-116			1	3	3	↘	↘										
276. balance-115 W:bal-ən(t)s B:bal-ənS			2	6	5	↘	↘									901 918 091	909
277. better-115			2	4	4	↘	↘									901	909
278. system-115 W:sis-təm B:sis-təm			2	2	3									↘	↘	104 111	109 308
279. upon-113 W:ə-pon B:ə-pon			2	2	4		↘			↘							904
280. week-113 W:wēk B:wēk			1	3	3		↘					↘				202 901	909
281. write-112 W:rīt			1	3	3	↘	↘									901 079	909 911
282. addition-111 W:ə-dish-ən B:ə-dish-ən			3	3	4									↘	↘	308 722 902	308 906 909
283. life-111			1	3	3	↘	↘									901	909
284. look-111 W:lůk B:lůk			1	3	3	↘	↘									072	903
285. note-111			1	3	3	↘	↘										
286. him-110 W:'him B:him			1	4	3	↘								↘		902	303
287. name-110			1	3	3	↘	↘									902	909
288. while-110			1	5	3						↘	↘				202 901	909
289. changes-109			2	5	2	↘					R					901 915	
290. contract-109			2	5	3						↘	↘				303 086	

DATA CARD LAYOUT FOR WORD ANALYSES

Field	Columns	Description
1	1 - 5	Mellinger Unadjusted Rank Order No.
2	6	Sequential Card Numbers (1 & 2)
3	7 - 21	Alphabetic Characters (Words)
4	22 - 26	Word Frequency (Occurrences in Mellinger Communications)
5	27	Syllabic Intensity
6	28 - 29	Gregg DJ Stroke Count
7	30 - 31	SW Century 21 Stroke Count
8	32	Gregg DJ Word Classification: 1 - Alphabetic 2 - Abbreviated/Contracted 3 - Memory (Brief Form) 4 - Memory Derivative (Brief Form Derivative)
9	33	SW Century 21 Word Classification: 1 - Alphabetic 2 - Abbreviated/Contracted 3 - Memory (Speed Form) 4 - Memory Derivative (Speed Form Derivative)
10	34	Use of Gregg DJ Shorthand Principle (Indicated by a "1")
11	35	Use of SW Century 21 Shorthand Principle (Indicated by a "1")
12	36-38, 39-41 42-44, 45-47 48-50, 51-53 54-56, 57-59	Gregg Shorthand Principles (Provides for 8 Principles per Word)
13	60-62, 63-65 66-68, 69-71 72-74, 75-77 78-80	SW Century 21 Shorthand Principles (Provides for 7 Principles per Word)

SAMPLE CARD-IMAGE PRINTOUTS OF MELLINGER'S FIRST 1,000 WORDS AS PUNCHED FROM RECORDING FORMS

(* indicates sample data)

RANK NO		ALPHABET	INTENSE	G_STROKE	S_STROKE	G_CLASS	SW_CLASS	G 1	G 2	G 3	G 4	G 1	G 2	G 3	G 4	SW 1	SW 2	SW 3	SW 4	SW 1	SW 2	SW 3
1	*	THE	1	1	1	3	3															
2		OF	1	1	1	3	3															
3		TO	1	2	2	1	1															
4		AND	1	1	1	3	3	108								107						
5		IN	1	1	1	3	3															
6		YOU	1	1	1	3	1															
7		A	1	1	1	3	3															
8		FOR	1	1	1	3										103						
9	*	WE	1	2	2		1	202	901							909						
10	*	YOUR	1	1	1	3	3															
11	*	BE	1	1	1	3	3															
12		IS	1	1	1	3	3															
13		THIS	1	2	2	3										303						
14		THAT	1	2	2	3	3	901														
15		WILL	1	1	1	3	3															
16		ON	1	2	2	1	1	909														
17		OUR	1	1	1	3	3															
18		AS	1	2	1	1	3	901	916													
19		ARE	1	1	1	3	3															
20		HAVE	1	1	1	3	3															
21		WITH	1	2	1	3	3	901														
22		IT	1	1	1	3	3															
23		I	1	1	1	3	1															
24		AT	1	1	1	3	3															
25	*	BY	1	1	1	3	3															
26		OR	1	2	2	1	1															
27		WHICH	1	1	2	3	3															
28		IF	1	2	1	1	3	901														
29		NOT	1	1	1	3	3															
30		WOULD	1	1	1	3	3															
31		FROM	1	2	2	3	3															
32		HAS	1	4	2	1	3	901	916							904	909	61				
33		AN	1	1	1	3	3															
34		US	1	2	2	1	1	911	71							904						
35		DEAR	1	3	3		1	306	901							909	31					
36		ALL	1	2	2	1	1															
37		ANY	2	3	2	1	3	902								909						
38		MR	2	2	2	3	2															
39		YOURS	1	2	2	4	4	71	76							62						

RANK NO	ALPHABET	INTENSE	G_STROKE	S_STROKE	G_CLASS	SW_CLASS	G 1	G 2	G 3	G 4	G 1	G 2	G 3	G 4	SW 1	SW 2	SW 3	SW 4	SW 1	SW 2	SW 3
201	* LAST	1	4	4	1	1	901	917	66						909						
202	NEXT	1	3	4	3	3	204	901							909						
203	BOTH	1	3	3	1	1	919														
204	INCLUDING	3	7	7			507	605	72						506	610	903				
205	RECENT	2	4	4			108	512	901	914	61				107	909	910				
206	STATES	1	3	3	4	4	914	918													
207	COURSE	1	4	4		1	306	917													
208	IMPORTANT	3	2	2	3	3	506								103	904	63				
209	OFFER	2	3	2	1		74								303	41					
210	UNTIL	2	4	4			507	901							909						
211	PRICE	1	4	4	1	1	901														
212	WITHIN	2	4	2	4	4	901	904							909						
213	ABLE	2	3	1	1	3	901	76							109						
214	ATTENTION	3	3	3		3	105	722	901						105	303	610				
215	BUILDING	2	5	4			109	605	901												
216	PROVIDE	2	6	3	1	3	901								303	909					
217	PERIOD	3	5	4			306	901	43						909						
218	MAIL	1	3	3		1	306	901													
219	RECORDS	2	6	4		4	110	903	918						103						
220	THEREFORE	2	2	3	4	4															
221	DUE	1	2	2	1	1									909						
222	GENERAL	3	3	5	3	1	901								103	622					
223	FORWARD	2	3	3			509	614													
224	HOME	1	4	4	1	1	909								606	51					
225	REQUESTED	3	5	4	4	4	101	512	901	913	11				909						
226	SALES	1	4	4	1	1	901	917							909	911					
227	MIGHT	1	3	3	1	1	901														
228	GO	1	2	1	1	3									909						
229	KEEP	1	3	3	1	1	903								109	65	64				
230	CONTINUE	3	3	4			105	503	910						909						
231	REPLY	2	4	5		1	512	901							909						
232	CASE	1	3	3	1	1	901	913							610	909					
233	CONCERNING	3	7	8			503	605	901	917	67	27			303						
234	GIVEN	2	4	3	1		901								3						
235	THREE	1	3	0	1		901	919							101						
236	DID	1	3	1	1		902	62													
237	FULL	1	3	3	1	1															
238	CONTACT	2	5	3		3	503	901													
239	CHANGE	1	4	1	1	3	901														
240	COPIES	2	5	5	1	1	901	917							909						

RANK NO	ALPHABET	INTENSE	G_STROKE	S_STROKE	G_CLASS	SW_CLASS	G 1	G 2	G 3	G 4	G 1	G 2	G 3	G 4	SW 1	SW 2	SW 3	SW 4	SW 1	SW 2	SW 3
401 *	RECEIVE	2	4	3		3	512	901	913	67					909						
402	REGARD	2	4	2	3	3	903								104						
403	ACCEPT	2	6	3	1	3	901	917	67						904	906	909				
404	AIR	1	2	2		1	306	901							909	69					
405	CREDIT	2	4	4			101	901	63						101	909	63				
406	RECORD	2	5	3		3	110	903													
407	FOUND	1	4	2		3	108	305							107						
408	INCREASE	2	5	5			507	901	917						506						
409	INDICATE	3	5	4			108	901	903	11	63				507	909	42	63			
410	PROBLEMS	2	8	4	1	4	901	918													
411	SPACE	1	4	4	1	1	901	912	917						909						
412	ALONG	2	4	4	1	1	901	909							909	69					
413	ANNUAL	3	3	4		1	725	902							903	909	69				
414	BASED	1	4	5	1		901	917	66						606	909	51				
415	HEAR	1	4	4		1	306	901							909	69	31				
416	LARGE	1	4	4	1	1	901								909						
417	MEET	1	3	3	1	1	901								909						
418	ORIGINAL	4	6	5	1		901								303						
419	PRIOR	2	5	4		1	301	901							909						
420	RESEARCH	2	5	6		1	512	901	917	27					909						
421	RETURNED	2	5	5		4	108	704	901	11					606	909	51				
422	SERVE	1	4	3	1	3	901	917	27						909						
423	STOCK	1	4	4	1	1	914	77													
424	ASKED	1	4	5	1		901	913							606	904	909	61	51		
425	OPERATION	4	5	6		1	722	901							904	909					
426	PRODUCTION	3	7	6		4	722														
427	PROJECT	2	6	5	1		34								707						
428	TELL	1	3	3	1	1	901								909						
429	CARE	1	3	3	1	1	903								909						
430	CERTAINLY	3	5	5			709	719	901	917	27				109	708	909	63			
431	DEVELOPMENT	4	5	3		4	103	710	901	63					709	503					
432	EITHER	2	2	2			720	901	76						713	909	70				
433	BENEFITS	3	6	6	1		901	918	25						303	909					
434	CUSTOMER	3	5	5		4	104	911	71	63					607						
435	ISSUED	2	4	4	1	4	902								304	606	904	909	61	51	
436	USING	2	4	4	4		302	605							610	904					
437	CONNECTION	3	5	6		1	722	901							909						
438	DATED	2	3	5			101	902	11						606	909	51				
439	DON'T	1	3	5			108	909	11						107	1					
440	EXECUTIVE	4	8	7			302	508	901	913					504	613	904	909	61		

RANK NO	ALPHABET	INTENSE	G_STROKE	S_STROKE	G_CLASS	SW_CLASS	G 1	G 2	G 3	G 4	G 1	G 2	G 3	G 4	SW 1	SW 2	SW 3	SW 4	SW 1	SW 2	SW 3
601 *	EXAMPLE	3	6	6			508	901	914						504	904	909	61			
602	EXCELLENT	3	6	4			108	508	901	917	31				107	504	904	909	910	61	
603	FAMILY	3	4	4			707	901	902						708	909					
604	INCREASED	2	6	7			507	901	917	66					506	606	909	51			
605	LISTING	2	6	5			605	901	917	66					303	610					
606	OPERATIONS	4	6	7		1	722	901	915						904	909					
607	PROCEDURES	3	8	7			726	901	914	917	67				104	909					
608	READ	1	3	3	1	1	901								909						
609	SAY	1	2	2	1	1	901	916							909						
610	SCHOOLS	1	5	5	1	1	913	917													
611	UNIT	2	5	3			302	901							303						
612	WISHES	2	3	3	4		202	915							303						
613	LOSS	1	3	3	1	1	918														
614	MAJOR	2	5	3	1		901	27							104	909					
615	SAVINGS	2	5	6			609	901	912	913					612	909					
616	SCHEDULED	2	5	6		2	109	725	901	913	11				606	909	51				
617	SIZE	1	3	3	1	1	901	916							909						
618	VISION	2	3	3			722	901							303						
619	WATER	2	4	4		1	202														
620	BELOW	2	3	3			502								502						
621	BOOKLET	2	6	5	1		901								303						
622	DELIVERY	4	6	3		4	504	901	74						503	909					
623	LIMITED	3	5	5			101	901	11						303	606	51				
624	MAN	1	3	3	1	1	902	62							909						
625	PROBABLY	3	4	4	4	4	709	901							908	909					
626	SERIES	2	5	4	1		901	917	27						303	909	910				
627	STORE	1	4	4	1	1	914														
628	ALTHOUGH	2	3	3			501	919	77						501						
629	CALLED	1	3	5			109	11							606	51					
630	CHARGES	2	5	5	1	1	901	915							909						
631	CONDITIONS	3	4	3		4	308	503	722	915											
632	DISCUSSED	2	6	5		4	505	911	71						606	51					
633	ENJOY	2	4	5			304	507							305	909	69				
634	ENOUGH	2	4	3	1	3	902	910							304	909	69				
635	FAR	1	3	3	1	1	901								909						
636	FURNISHED	2	4	5			509								103	303	606	51			
637	HESITATE	3	7	7	1	1	901	902	914						904	909	61				
638	HISTORY	3	7	6	1		901	914							303	909					
639	LOAN	1	3	3	1	1	909														
640	MEMBERSHIP	3	5	5			106	612							106	618					

RANK NO		ALPHABET	INTENSE	G_STROKE	S_STROKE	G_CLASS	SW_CLASS	G 1	G 2	G 3	G 4	G 1	G 2	G 3	G 4	SW 1	SW 2	SW 3	SW 4	SW 1	SW 2	SW 3
801	*	EFFORTS	2	4	4			509	901	918	63					103	904	909	61	63		
802		EXTREMELY	3	7	7			508	709	901	902	914				504	708	904	909	61		
803		IDEA	3	3	4	3	1	902								909	911	71				
804		IMMEDIATE	4	3	2	3	3	902														
805		OFF	1	2	2	1	1									904						
806		PAGE	1	3	3	1	1	901								909						
807		REASONS	2	4	5		1	512	914	918	61					909						
808		RISK	1	4	3	1		901	917	66						303						
809		SET	1	3	3	1	1	901	914							909						
810		SUBSCRIPTION	3	7	6			514	722	901	912	913				510	617					
811		TOLD	1	3	3			109								105						
812		TRUST	1	5	5	1	1	71	72							903						
813		ACCOUNTING	3	7	5		4	108	305	605	901					610	904	906	909			
814		ARTICLE	3	5	5			601	901	32						601	909	69				
815		CALLS	1	4	4	1	1	917														
817	+	CONTINUING	4	5	6			105	503	605	910					109	610	65	64			
818		CONVENIENT	3	4	4	2	3	503	901							909						
819		CORPORATE	3	7	6	1		901								303						
820		DEVELOPED	3	5	4		4	103	901	63						503	606	51				
821		DISCUSSION	3	5	5		4	505	722	918	64											
822		EMPLOYMENT	3	6	4		4	304	506	710						709						
823		GIFT	1	4	3	1		901								303	902					
824		HEARING	2	6	6			306	605	901						610	909	31	69			
825		I'M	1	4	4	4		902	1							909	911	1	71			
826		KINDLY	2	4	4			108	709	901	79					107	708	909	911			
827		PAYABLE	3	3	3			701	901	32						701	909					
828		PREFER	2	6	4	1		901	28							103	909					
829		PRINTED	2	5	5			108	901	61						303	606	51				
830		PROPERLY	3	6	6			709	901							708	909					
831		PROVIDES	2	7	4	1	4	901	918													
832		PURPOSES	3	4	5	4		511	917							509						
833		RELATIONS	3	6	7		1	722	901	915						909						
834		REQUESTS	2	6	3	4	4	512	901	913	918											
835		RETIREMENT	3	6	6			710	901							709	909					
836		REVISED	2	5	7			512	901	913						606	909	51				
837		SALE	1	3	3	1	1	901	917							909						
838		SUBMIT	2	4	3			514	901	914						303	510					
839		SUGGESTIONS	3	5	4	4	4	722	915	71												
840		TRAVEL	2	5	5	1	1	901	74							909						

[+]The word "club" occurred twice on the Mellinger list (Nos. 774 and 816). The second occurrence (No. 816) was deleted.

SAMPLE SAS COMPUTER PRINTOUT OF MELLINGER'S FIRST 1,000 WORDS BY GREGG DJ ALPHABETIC METHOD OF WRITING

G_CLASS=1

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	ABLE	213	2	3
2	ABOVE	146	2	4
3	ACCEPT	403	2	6
4	ACROSS	928	2	5
5	ACTIVITIES	534	4	7
6	ADD	680	1	2
7	ADDRESS	323	2	5
8	ADVANCE	703	2	6
9	ADVISE	268	2	5
10	ADVISED	547	2	6
11	AGAIN	187	2	3
12	AGAINST	517	2	5
13	AGE	570	1	2
14	AGENCY	724	3	5
15	AGO	597	2	3
16	AGREE	795	2	4
17	AGREED	984	2	5
18	AID	986	1	2
19	ALL	36	1	2
20	ALONG	412	2	4
21	ANSWER	324	2	5
22	ANY	37	2	3
23	APPLIED	681	2	5
24	APPLY	535	2	4
25	APPROVAL	490	3	6
26	APPROVED	583	2	6
27	ARRANGE	769	2	5
28	AS	18	1	2
29	ASK	548	1	3
30	ASKED	424	1	4
31	ASSURE	691	2	4
32	ATTACHED	148	2	5
33	AUTHORIZED	989	3	6
34	AVERAGE	842	3	4
35	BACK	269	1	3
36	BALANCE	276	2	6
37	BASED	414	1	4
38	BASIC	797	2	4
39	BEEN	43	1	3
40	BENEFIT	479	3	5

G_CLASS=1

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
41	BENEFITS	433	3	6
42	BEST	167	1	4
43	BETTER	277	2	4
44	BILL	444	1	3
45	BLUE	932	1	3
46	BOOK	370	1	3
47	BOOKLET	621	2	6
48	BOOKS	384	1	4
49	BOTH	203	1	3
50	BRANCH	845	1	5
51	BRING	451	1	4
52	BROCHURE	647	2	6
53	BUDGET	598	2	3
54	BUY	771	1	2
55	CALL	165	1	3
56	CALLS	815	1	4
57	CAR	452	1	3
58	CARE	429	1	3
59	CAREERS	772	2	5
60	CARRY	992	2	4
61	CARS	744	1	4
62	CASE	232	1	3
63	CASH	484	1	3
64	CATALOG	957	3	6
65	CERTIFICATE	518	4	8
66	CHANCE	902	1	4
67	CHANGE	239	1	4
68	CHANGED	903	1	5
69	CHANGES	289	2	5
70	CHARGE	257	1	4
71	CHARGES	630	2	5
72	CHECK	159	1	3
73	CHECKS	773	1	4
74	CITY	550	2	4
75	CLAIM	453	1	4
76	CLOSE	933	1	4
77	CODE	775	1	3
78	COLLEGE	592	2	5
79	COLOR	314	2	4
80	COMMITTEE	149	3	5

SAMPLE SAS COMPUTER PRINTOUT OF MELLINGER'S FIRST 1,000 WORDS BY GREGG DJ BRIEF FORM METHOD OF WRITING

G_CLASS=3					G_CLASS=3				
OBS	ALPHABET	RANKNO	INTENSE	G_STROKE	OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	A	7	1	1	41	IN	5	1	1
2	ABOUT	75	2	2	42	IS	12	1	1
3	ACKNOWLEDGE	876	3	2	43	IT	22	1	1
4	ADVANTAGE	569	3	2	44	MERCHANDISE	714	3	7
5	AFTER	140	2	3	45	MR	38	2	2
6	AM	92	1	1	46	MRS	311	2	3
7	AN	33	1	1	47	MUST	120	1	2
8	AND	4	1	1	48	NEVER	715	2	2
9	ARE	19	1	1	49	NEXT	202	1	3
10	AT	24	1	1	50	NOT	29	1	1
11	BE	11	1	1	51	OF	2	1	1
12	BETWEEN	262	2	2	52	ONE	46	1	2
13	BIG	860	1	2	53	OPINION	697	3	3
14	BUSINESS	87	2	2	54	OPPORTUNITY	174	5	3
15	BUT	62	1	2	55	ORDER	72	2	2
16	BY	25	1	1	56	OUR	17	1	1
17	CAN	40	1	1	57	OUT	86	1	2
18	COMPANY	64	3	2	58	OVER	135	2	1
19	CORRESPONDENCE	938	4	4	59	PART	176	1	2
20	COULD	119	1	2	60	PARTICULAR	400	4	3
21	DIFFICULT	746	3	2	61	PRESENT	175	2	2
22	DURING	109	2	2	62	PROGRESS	762	2	3
23	ENVELOPE	381	3	3	63	PUBLIC	303	2	2
24	EVER	747	2	2	64	PUBLICATION	675	4	3
25	EVERY	179	3	2	65	PURPOSE	555	2	3
26	EXPERIENCE	319	4	5	66	PUT	532	1	1
27	FOR	8	1	1	67	QUESTION	469	2	2
28	FROM	31	1	2	68	REGARD	402	2	4
29	GENERAL	222	3	3	69	REGULAR	442	3	3
30	GENTLEMEN	168	3	2	70	REQUEST	182	2	5
31	GLAD	305	1	2	71	RESPONSIBLE	919	4	3
32	GOOD	151	1	1	72	SATISFACTORY	499	5	5
33	GREAT	353	1	2	73	SEND	107	1	3
34	HAVE	20	1	1	74	SEVERAL	267	3	3
35	HIS	102	1	1	75	SHALL	339	1	1
36	HOW	158	1	2	76	SHORT	565	1	2
37	I	23	1	1	77	SHOULD	52	1	2
38	IDEA	803	3	3	78	SITUATION	501	4	4
39	IMMEDIATE	804	4	3	79	SOON	195	1	2
40	IMPORTANT	208	3	2	80	STATE	198	1	2

SAMPLE SAS COMPUTER PRINTOUT OF MELLINGER'S FIRST 1,000 WORDS BY GREGG DJ BLEND PRINCIPLES

(det,ted) ---------- GT=101 ----------

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	ACCEPTED	982	3	6
2	ADDED	742	2	2
3	APPRECIATED	313	5	9
4	COMPLETED	309	3	5
5	CREDIT	405	2	4
6	DATED	438	2	3
7	DETAILS	707	2	4
8	DETERMINE	584	3	4
9	EXECUTED	862	4	7
10	EXPECTED	711	3	5
11	INCLUDED	354	3	5
12	INDICATED	322	4	5
13	INTERESTED	160	4	4
14	LIMITED	623	3	5
15	LISTED	510	2	4
16	LOCATED	696	3	5
17	NEEDED	511	2	3
18	PROVIDED	341	3	6
19	REPORTED	948	3	4
20	REQUESTED	225	3	5
21	SELECTED	793	3	6
22	STUDY	576	2	3
23	SUBMITTED	516	3	4
24	TODAY	247	2	2

(def,dif) ---------- GT=102 ----------

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	DIFFERENT	800	3	4
2	DIFFICULT	746	3	2

(dev,div) ---------- GT=103 ----------

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	DEVELOPED	820	3	5
2	DEVELOPMENT	431	4	5
3	DIVISION	298	3	3
4	INDIVIDUAL	465	5	5

(dem,tem) ---------- GT=104 ----------

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	CUSTOMER	434	3	5
2	CUSTOMERS	537	3	6
3	ITEM	486	2	2
4	ITEMS	255	2	3
5	SYSTEM	278	2	2
6	TIME	47	1	1
7	TIMES	657	1	2

(den,ten) ---------- GT=105 ----------

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	ASSISTANCE	261	3	4
2	ATTEND	536	2	3
3	ATTENTION	214	3	3
4	BETWEEN	262	2	2
5	CONTINUE	230	3	3
6	CONTINUED	798	3	4
7	CONTINUING	817	4	5
8	EVIDENCE	726	3	4
9	EXTEND	864	2	4
10	MAINTENANCE	854	3	7
11	OUTSTANDING	757	3	7
12	STANDARD	544	2	4
13	STUDENT	767	2	5
14	STUDENTS	545	2	6
15	UNDERSTAND	450	3	5
16	UNDERSTANDING	666	4	7
17	WRITTEN	577	2	3

SAMPLE SAS COMPUTER PRINTOUT OF MELLINGER'S FIRST 1,000 WORDS BY GREGG DJ JOINED WORD BEGINNING PRINCIPLES

(al-) GT=501

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	ALMOST	929	2	5
2	ALREADY	296	3	5
3	ALSO	66	2	3
4	ALTHOUGH	628	2	3

(be-) GT=502

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	BECAUSE	126	2	4
2	BECOME	379	2	3
3	BEGIN	956	2	4
4	BEGINNING	878	3	6
5	BEHALF	705	2	5
6	BELIEF	472	2	4
7	BELIEVE	193	2	4
8	BELOW	620	2	3
9	BETWEEN	262	2	2

(com-,con-) GT=503

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	COMPLETE	178	2	5
2	COMPLETED	309	3	5
3	COMPLETELY	935	3	6
4	CONCERNED	600	2	5
5	CONCERNING	233	3	7
6	CONDITION	667	3	3
7	CONDITIONS	631	3	4
8	CONFERENCE	745	3	7
9	CONFIRM	936	2	5
10	CONSIDER	454	3	5
11	CONSIDERATION	333	5	7
12	CONSIDERED	777	3	5
13	CONSTRUCTION	495	3	6
14	CONTACT	238	2	5
15	CONTAINS	937	2	3
16	CONTINUE	230	3	3

(com-,con-) cont. GT=503

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
17	CONTINUED	798	3	4
18	CONTINUING	817	4	5
19	CONTRACT	290	2	5
20	CONTRIBUTION	904	4	6
21	CONTROL	390	2	5
22	CONVENIENCE	391	3	3
23	CONVENIENT	818	3	4
24	CONVERSATION	778	4	7

(de-,di-) GT=504

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	DECISION	668	3	4
2	DELAY	492	2	3
3	DELIVERY	622	4	6
4	DEPARTMENT	105	3	4
5	DEPARTMENTS	906	3	5
6	DESIGN	780	2	4
7	DESIGNED	520	2	4
8	DESIRE	485	2	4
9	DIRECT	994	2	5
10	DIRECTLY	508	3	6
11	DIRECTOR	708	3	6
12	DIRECTORS	995	3	7

(des-, dis-) GT=505

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	DESCRIBED	683	2	7
2	DISCUSS	528	2	5
3	DISCUSSED	632	2	6
4	DISCUSSION	821	3	5
5	DISTRIBUTION	456	4	7
6	DISTRICT	669	2	6

SAMPLE SAS COMPUTER PRINTOUT OF MELLINGER'S FIRST 1,000 WORDS BY GREGG DJ DISJOINED WORD ENDING PRINCIPLES

(-cal,-cle) GT=601

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	ARTICLE	814	3	5
2	ARTICLES	743	3	6
3	MEDICAL	376	3	5

(-gram) GT=602

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	PROGRAM	76	2	5

(-ing) GT=605

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	ACCORDING	351	3	6
2	ACCOUNTING	813	3	7
3	ADVERTISING	590	4	7
4	ANYTHING	987	3	6
5	ASKING	877	2	5
6	BEGINNING	878	3	6
7	BEING	131	2	3
8	BILLING	931	2	5
9	BUILDING	215	2	5
10	CHECKING	879	2	5
11	COMING	776	2	4
12	CONCERNING	233	3	7
13	CONTINUING	817	4	5
14	COVERING	380	3	6
15	DOING	693	2	4
16	ENCLOSING	302	3	4
17	ENGINEERING	781	4	7
18	EXISTING	481	3	7
19	FOLLOWING	164	3	6
20	GETTING	652	2	5
21	GIVING	712	2	5
22	GOING	382	2	4
23	HANDLING	457	2	6
24	HAVING	252	2	3
25	HEARING	824	2	6

(-ing) cont. GT=605

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
26	INCLUDING	204	3	7
27	INTERESTING	685	4	6
28	LISTING	605	2	6
29	LOOKING	788	2	5
30	MAILING	473	2	5
31	MAKING	393	2	5
32	MARKETING	790	3	8
33	MEETING	171	2	5
34	NOTHING	755	2	5
35	OPERATING	574	4	7
36	OUTSTANDING	757	3	7
37	PLANNING	524	2	6
38	PROCESSING	641	3	6
39	READING	699	2	5
40	RECEIVING	389	3	6
41	REGARDING	326	3	6
42	REQUESTING	513	3	7
43	RETURNING	542	3	7
44	SENDING	470	2	5
45	SHIPPING	974	2	5
46	SHOWING	566	2	4
47	TAKING	503	2	5
48	THANK	78	1	3
49	THINK	362	1	3
50	THINKING	768	2	5
51	TRAINING	307	2	6
52	UNDERSTANDING	666	4	7
53	USING	436	2	4
54	WORKING	358	2	4
55	WRITING	546	2	5

(-ings) GT=609

OBS	ALPHABET	RANKNO	INTENSE	G_STROKE
1	SAVINGS	615	2	5
2	THANKS	356	1	3
3	THINGS	721	1	3

SAMPLE SAS COMPUTER PRINTOUT OF MELLINGER'S FIRST 1,000 WORDS BY SW CENTURY 21 ALPHABETIC METHOD OF WRITING

SW_CLASS=1

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	ABOVE	146	2	4
2	ACROSS	928	2	5
3	ACTION	328	2	4
4	ADD	680	1	2
5	ADDRESS	323	2	5
6	AGAIN	187	2	4
7	AGAINST	517	2	6
8	AGE	570	1	2
9	AGENCY	724	3	5
10	AGO	597	2	3
11	AHEAD	985	2	5
12	AID	986	1	2
13	AIR	404	1	2
14	ALL	36	1	2
15	ALONG	412	2	4
16	AMONG	796	2	4
17	ANNUAL	413	3	4
18	ANSWER	324	2	4
19	APPEAR	725	2	4
20	APPEARS	988	2	5
21	APPLY	535	2	4
22	APPROVAL	490	3	6
23	AREA	144	3	4
24	AREAS	359	3	5
25	ARRANGE	769	2	5
26	ASK	548	1	3
27	AWARE	843	2	4
28	BACK	269	1	3
29	BALANCE	276	2	5
30	BEST	167	1	4
31	BETTER	277	2	4
32	BLUE	932	1	3
33	BOARD	254	1	4
34	BOOK	370	1	3
35	BOOKS	384	1	4
36	BOTH	203	1	3
37	BRANCH	845	1	5
38	BUT	62	1	3
39	BUY	771	1	2
40	CALL	165	1	3

SW_CLASS=1

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
41	CALLS	815	1	4
42	CAR	452	1	3
43	CARD	264	1	4
44	CARDS	591	1	5
45	CARE	429	1	3
46	CAREERS	772	2	5
47	CARRY	992	2	4
48	CARS	744	1	4
49	CASE	232	1	3
50	CASES	352	2	4
51	CASH	484	1	3
52	CATALOG	957	3	6
53	CHANCE	902	1	4
54	CHARGE	257	1	4
55	CHARGES	630	2	5
56	CHECK	159	1	3
57	CHECKS	773	1	4
58	CLAIM	453	1	4
59	CLEAR	958	1	4
60	CLOSE	933	1	4
61	CLUB	774	1	4
62	CODE	775	1	3
63	COLOR	314	2	4
64	COME	559	1	3
65	COMMERCIAL	880	3	6
66	COMPLETE	178	2	6
67	CONNECTION	437	3	6
68	COOPERATION	325	5	8
69	COPIES	240	2	5
70	COPY	88	2	4
71	CORPORATION	519	4	8
72	CORRECT	551	2	5
73	COST	163	1	4
74	COSTS	455	1	5
75	COULD	119	1	3
76	COURSE	207	1	4
77	COVER	374	2	4
78	DATA	939	2	4
79	DATE	112	1	3
80	DAY	184	1	2

SAMPLE SAS COMPUTER PRINTOUT OF MELLINGER'S FIRST 1.000 WORDS BY SW CENTURY 21 SPEED FORM METHOD OF WRITING

SW_CLASS=3					SW_CLASS=3				
OBS	ALPHABET	RANKNO	INTENSE	S_STROKE	OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	A	7	1	1	41	EFFECT	573	2	2
2	ABLE	213	2	1	42	ENOUGH	634	2	3
3	ABOUT	75	2	2	43	ENVELOPE	381	3	3
4	ACCEPT	403	2	3	44	EVENT	661	2	3
5	ADVANCE	703	2	4	45	EVER	747	2	2
6	ADVANTAGE	569	3	3	46	EXPECT	560	2	4
7	ADVISE	268	2	3	47	EXPENSE	649	2	3
8	AFTER	140	2	2	48	EXPERIENCE	319	4	4
9	AM	92	1	1	49	FACT	320	1	1
10	AMOUNT	124	2	3	50	FORM	114	1	2
11	AN	33	1	1	51	FOUND	407	1	2
12	AND	4	1	1	52	FROM	31	1	2
13	ANY	37	2	2	53	GO	228	1	1
14	APPRECIATE	143	4	2	54	GOOD	151	1	1
15	ARE	19	1	1	55	GREAT	353	1	1
16	AS	18	1	1	56	HAS	32	1	2
17	AT	24	1	1	57	HAVE	20	1	1
18	ATTENTION	214	3	3	58	HE	80	1	1
19	BE	11	1	1	59	HIS	102	1	1
20	BEEN	43	1	1	60	HOPE	104	1	1
21	BUSINESS	87	2	2	61	HOSPITAL	785	3	4
22	BY	25	1	1	62	HOW	158	1	2
23	CAN	40	1	1	63	IF	28	1	1
24	CERTIFICATE	518	4	4	64	IMMEDIATE	804	4	2
25	CHANGE	239	1	1	65	IMMEDIATELY	385	5	2
26	COMMITTEE	149	3	2	66	IMPORTANT	208	3	2
27	COMPANY	64	3	3	67	IN	5	1	1
28	CONDITION	667	3	2	68	INDIVIDUAL	465	5	2
29	CONSIDER	454	3	3	69	INDUSTRY	386	3	3
30	CONTACT	238	2	3	70	INFORMATION	54	4	2
31	CONTRACT	290	2	3	71	INTEREST	127	3	3
32	CONTROL	390	2	4	72	IS	12	1	1
33	CONVENIENCE	391	3	4	73	ISSUE	553	2	2
34	CONVENIENT	818	3	4	74	IT	22	1	1
35	CORRESPONDENCE	938	4	5	75	JUST	132	1	2
36	DEPARTMENT	105	3	2	76	LETTER	53	2	2
37	DIFFICULT	746	3	2	77	MATERIAL	199	4	4
38	DIRECT	994	2	3	78	MERCHANDISE	714	3	3
39	DISCUSS	528	2	3	79	MORE	60	1	1
40	DOWN	684	1	2	80	MUST	120	1	3

SAMPLE SAS COMPUTER PRINTOUT OF MELLINGER'S FIRST 1,000 WORDS BY SW CENTURY 21 BEND AND BLEND PRINCIPLES

(dd,dt,rd) SWT=101

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	CREDIT	405	2	4
2	DETAILS	707	2	4
3	DETERMINE	584	3	4
4	DID	236	1	1
5	TODAY	247	2	2

(dm,dn) SWT=102

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	EVIDENCE	726	3	4
2	STUDENT	767	2	5
3	STUDENTS	545	2	6

(fr) SWT=103

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	BEFORE	155	2	2
2	CONFERENCE	745	3	5
3	CONFIRM	936	2	4
4	DIFFERENT	800	3	3
5	EFFORT	480	2	3
6	EFFORTS	801	2	4
7	FIRM	960	1	2
8	FOR	8	1	1
9	FORWARD	223	2	3
10	FORWARDED	670	3	4
11	FREE	274	1	2
12	FREIGHT	847	1	3
13	FRIEND	848	1	3
14	FRIENDS	749	1	4
15	FURNISH	651	2	3
16	FURNISHED	636	2	5
17	FURTHER	111	2	2
18	INFORMATION	54	4	2
19	OFFER	209	2	2
20	OFFERED	522	2	4

(fr) cont. SWT=103

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
21	PREFER	828	2	4
22	REFER	763	2	3
23	REFERENCE	317	3	5
24	REFERRED	719	2	5
25	THEREFORE	220	2	3
26	TRANSFER	688	2	3

(gr,ir) SWT=104

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	AGREE	795	2	3
2	AGREED	984	2	3
3	AGREEMENT	443	3	4
4	BACKGROUND	844	2	5
5	FIGURES	996	2	3
6	GREAT	353	1	1
7	GREATER	908	2	3
8	GREATLY	866	2	2
9	GROUP	329	1	3
10	GROUPS	963	1	4
11	MAJOR	614	2	3
12	MANAGER	300	3	4
13	PROCEDURE	498	3	6
14	PROCEDURES	607	3	7
15	PROGRESS	762	2	6
16	REGARD	402	2	2
17	REGARDING	326	3	4
18	REGARDS	478	2	3

SAMPLE SAS COMPUTER PRINTOUT OF MELLINGER'S FIRST 1,000 WORDS BY SW CENTURY 21 JOINED WORD BEGINNING PRINCIPLES

(al-) SWT=501

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	ALMOST	929	2	5
2	ALREADY	296	3	5
3	ALSO	66	2	3
4	ALTHOUGH	628	2	3
5	ALWAYS	348	2	4

(be-) SWT=502

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	BECAUSE	126	2	4
2	BECOME	379	2	4
3	BEFORE	155	2	2
4	BEGIN	956	2	3
5	BEGINNING	878	3	5
6	BEHALF	705	2	5
7	BELIEF	472	2	4
8	BELIEVE	193	2	4
9	BELOW	620	2	3
10	BETWEEN	262	2	5

(de-) SWT=503

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	DECISION	668	3	4
2	DELAY	492	2	3
3	DELIVERY	622	4	3
4	DEPARTMENT	105	3	2
5	DEPARTMENTS	906	3	3
6	DESCRIBED	683	2	5
7	DESIGN	780	2	4
8	DESIGNED	520	2	6
9	DESIRE	485	2	4
10	DEVELOPED	820	3	4
11	DEVELOPMENT	431	4	3

(ex-) SWT=504

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	EXAMINATION	783	5	7
2	EXAMPLE	601	3	6
3	EXCELLENT	602	3	4
4	EXCEPT	846	2	5
5	EXECUTED	862	4	7
6	EXECUTIVE	440	4	7
7	EXISTING	481	3	6
8	EXPECT	560	2	4
9	EXPECTED	711	3	6
10	EXPENSE	649	2	3
11	EXPENSES	863	3	4
12	EXPERIENCE	319	4	4
13	EXTEND	864	2	4
14	EXTRA	784	2	5
15	EXTREMELY	802	3	7

(in-) SWT=506

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	INCLUDE	360	2	5
2	INCLUDED	354	3	7
3	INCLUDES	965	2	6
4	INCLUDING	204	3	7
5	INCOME	399	2	4
6	INCREASE	408	2	5
7	INCREASED	604	2	7
8	INFORMED	729	2	5
9	INQUIRY	911	3	6
10	INSPECTION	885	3	5
11	INSTALLATION	852	4	7
12	INSTRUCTIONS	441	3	7
13	INSURANCE	137	3	5
14	INSURED	786	2	5

SAMPLE SAS COMPUTER PRINTOUT OF MELLINGER'S FIRST 1,000 WORDS BY SW CENTURY 21 DISJOINED WORD ENDING PRINCIPLES

(-acle,-ical,-icle) SWT=601

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	ARTICLE	814	3	5
2	ARTICLES	743	3	6
3	MEDICAL	376	3	5

(-bility) SWT=603

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	POSSIBILITY	972	5	5
2	RESPONSIBILITY	526	6	4

(-casion,-cation) SWT=604

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	APPLICATION	294	4	6
2	APPLICATIONS	955	4	7
3	COMMUNICATIONS	993	5	8
4	LOCATION	595	3	5
5	PUBLICATION	675	4	5

(-cher,-ture) SWT=605

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	FUTURE	173	2	4
2	NATURE	998	2	4
3	PICTURE	889	2	4
4	SIGNATURE	976	3	5
5	TEACHERS	925	2	5

(-ed) SWT=606

OBS	ALPHABET	RANKNO	INTENSE	S_STROKE
1	ACCEPTED	982	3	5
2	ADDED	742	2	4
3	ADVISED	547	2	5
4	AGREED	984	2	3
5	APPLIED	681	2	6
6	APPRECIATED	313	5	4
7	APPROVED	583	2	7
8	ASKED	424	1	5
9	ATTACHED	148	2	6
10	AUTHORIZED	989	3	6
11	BASED	414	1	5
12	CALLED	629	1	5
13	CHANGED	903	1	3
14	COMPLETED	309	3	8
15	CONCERNED	600	2	8
16	CONSIDERED	777	3	5
17	CONTINUED	798	3	6
18	COVERED	648	2	6
19	DATED	438	2	5
20	DESCRIBED	683	2	5
21	DESIGNED	520	2	6
22	DEVELOPED	820	3	4
23	DISCUSSED	632	2	5
24	ENCLOSED	68	2	4
25	ENTITLED	782	3	7
26	ESTABLISHED	710	3	6
27	EXECUTED	862	4	7
28	EXPECTED	711	3	6
29	FORWARDED	670	3	4
30	FURNISHED	636	2	5
31	HANDLED	671	2	7
32	INCLUDED	354	3	7
33	INCREASED	604	2	7
34	INDICATED	322	4	6
35	INFORMED	729	2	5
36	INSURED	786	2	5
37	INTERESTED	160	4	5
38	INVOLVED	366	2	6
39	ISSUED	435	2	4
40	LIMITED	623	3	5

APPENDIX B

MATERIALS USED IN ANALYSIS OF 3,000 RUNNING SHORTHAND-COUNTABLE WORDS

SAMPLE CARD-IMAGE PRINTOUT OF RUNNING SHORTHAND-COUNTABLE COPY

WE ARE DELIGHTED TO LEARN OF YOUR PLAN TO AWARD A TRIP TO SOME OVERSEAS TOURIST RESORT AS FIRST PRIZE TO YOUR OUTSTANDING SALESMAN OF THE YEAR THE ANTICIPATION OF WINNING SUCH AN APPEALING REWARD SHOULD STIMULATE YOUR SALES FORCE TO UNPRECEDENTED ACHIEVEMENTS WE ARE PREPARED TO WORK WITH YOU IN PLANNING THE DETAILS OF TRAVEL HOUSING AND OTHER SERVICES NOT ONLY FOR THE PRIZE WINNING RECIPIENT BUT ALSO FOR OTHERS INTERESTED IN VACATIONING OVERSEAS I AM ENCLOSING A BROCHURE DESCRIBING SOME OF THE VERY ALLURING RESORT POSSIBILITIES YOU MAY WANT TO CONSIDER I SHALL BE INTERESTED IN YOUR REACTION TO SOME OF THE TRAVEL SPECIALS WE HAVE TO OFFER

THE CONTINUED OCCURRENCE OF SERIOUS ACCIDENTS THROUGHOUT OUR PRODUCTION DIVISIONS WARRANTS IMMEDIATE DELIBERATION THOSE OF US AWARE OF THE PROBLEM ARE DISTURBED NOT ONLY BY THE FREQUENCY OF ACCIDENTS BUT EVEN MORE BY THE EXTENT OF PERMANENT BODILY HARM INCURRED BY OUR EMPLOYEES I SHOULD LIKE TO HAVE YOU AND YOUR ASSISTANT MANAGERS MEET WITH ME AND OTHER BOARD MEMBERS TO DISCUSS POSSIBLE STEPS THAT MIGHT BE TAKEN TO REDUCE THE INCREASED INCIDENCE OF ACCIDENTS IN YOUR DIVISIONS WE SHALL PLAN TO MEET IN THE EXECUTIVE SUITE NEXT MONDAY MORNING AT A.M. PLEASE SEE THAT ALL MEN UNDER YOUR SUPERVISION ARE NOTIFIED OF THIS MEETING AND THAT SUITABLE ARRANGEMENTS ARE MADE TO HAVE THEM PRESENT FOR THIS IMPORTANT CONFERENCE

IT IS A PLEASURE FOR ME TO RECOMMEND KIRK ROSS WHO HAS APPLIED FOR A POSITION WITH YOUR COMPANY MR ROSS WORKED FOR US FOR ALMOST TWO YEARS AS AN ASSISTANT PURCHASING AGENT IN THIS POSITION HE WAS RESPONSIBLE FOR ESTABLISHING SPECIFICATIONS AND PROCESSING PURCHASE REQUESTS DURING PEAK PERIODS HE WOULD ALSO NEGOTIATE WITH VENDORS FOR MERCHANDISE DESIRED WHEN MR ROSS WORKED FOR US HE WAS INDUSTRIOUS CONSCIENTIOUS AND COMPLETELY RELIABLE WE WERE RELUCTANT TO LOSE HIM WHEN HE LEFT TO COMPLETE HIS MASTER'S DEGREE IN BUSINESS MANAGEMENT IN MY OPINION MR ROSS WOULD BE A DEFINITE ASSET TO YOUR COMPANY

THANK YOU FOR YOUR RECENT ORDER WE ARE HAPPY TO HAVE THE OPPORTUNITY TO SERVE YOU WE REGRET THAT THE MODEL MAJESTIC HEADSETS YOU ORDERED ARE NO LONGER IN PRODUCTION AS A SUBSTITUTE WE CAN OFFER YOU OUR NEW MODEL THIS IS AN IMPROVED HEADSET OF HIGH IMPACT PLASTIC CONSTRUCTION AND NICKEL PLATED METAL PARTS WITH REMOVABLE EAR CUSHIONS AND STANDARD MOLDED PHONE PLUGS THE NET PRICE OF THIS MODEL IS WE ARE PROCESSING THE REMAINING ITEMS ON YOUR ORDER AND THEY WILL BE SHIPPED WITHOUT DELAY IF YOU WISH US TO SUBSTITUTE THE MODEL HEADSET FOR THE MODEL PLEASE LET US KNOW WE WILL SHIP THEM PROMPTLY

THE EXCELLENT WAY IN WHICH YOU HAVE HANDLED YOUR CREDIT ACCOUNT WITH US IS SINCERELY APPRECIATED WE WANT YOU TO KNOW THAT SERVING YOU HAS BEEN A GENUINE PLEASURE THANK YOU FOR GIVING US THIS OPPORTUNITY TO BE OF SERVICE ALTHOUGH YOUR ACCOUNT IS PAID IN FULL PLEASE DO NOT FEEL THAT IT IS CLOSED YOUR ACCOUNT IS OPEN IN OUR FILES READY TO SERVE YOU WE HOPE YOU WILL USE IT OFTEN YOUR CREDIT RECORD NOW ENTITLES YOU TO MAKE PURCHASES WITH NO DOWN PAYMENT WE SHALL LOOK FORWARD TO SEEING YOU

SAMPLE CARD-IMAGE PRINTOUTS OF THE 3,000 RUNNING SHORTHAND-COUNTABLE WORDS AS PUNCHED FROM RECORDING FORMS

RANK NO	ALPHABET	INTENSE	G_STROKE	S_STROKE	G_CLASS	SW_CLASS	G 1	G 2	G 3	G 4	G 1	G 2	G 3	G 4	SW 1	SW 2	SW 3	SW 4	SW 1	SW 2	SW 3
1001	$25	2	1	1			809								804						
1002	$5	2	1	1			809								804						
1003	A.M.	2	3	2			805								805	909					
1004	ABSTRACT	2	7	8	1	1	901	914	36	64					904	909	61				
1005	ACCESS	2	3	5		1	111	901							904	906	909				
1006	ACCIDENTS	3	7	6			105	901	914	918	13	63			102	904	906	909	11		
1007	ACHIEVEMENTS	3	6	6			710	901	902	918					709	909	70				
1008	ACKNOWLEDGMENT	4	3	7	4		710	901							303	709	904	906	909		
1009	ADHESIVES	3	8	8	1		902	913	918	35	66				613	906	909				
1010	AFTERNOON	3	6	5	4	4	901	910							903	906	904	909			
1011	AIRLINE	2	5	5		1	306	901	79						909	911	69				
1012	AIRPORT	2	5	6		1	306	713	901						909	69					
1013	AIRPORTS	2	6	7		1	306	713	901	918					909	69					
1014	ALLURING	3	5	6			605	726	901						610	903	909	69			
1015	AMHERST	2	6	8			2	901	902	917	65				2	909	69				
1016	ANALYSIS	4	4	6			111	902	61						303	909	69				
1017	ANNOUNCEMENT	3	7	5		4	305	710	902	918	64				306	709	909	69			
1018	ANTICIPATED	5	6	8			101	108	901	918	11				107	303	606	909	63	51	70
1019	ANTICIPATION	5	6	7			108	722	901	918	11				107	303	909	63	70		
1020	APOLOGIZE	4	6	6			712	901							602	904	909	61			
1021	APPEAL	2	4	4		1	306	901							904	909	61				
1022	APPEALING	3	6	6			306	605	901						610	904	909	61			
1023	APPEALS	2	5	5		1	306	901	917						904	909	61				
1024	ARCHITECTURAL	5	9	7		2	726	901							605	620	909	69			
1025	ARRANGED	2	6	7	1		901								606	909	51	69			
1026	ARRANGING	3	7	7			605	901							610	909	69				
1027	ARTISTIC	3	8	6	1		901	918	66						303	909	69				
1028	ASSET	2	4	4	1	1	901	914							904	909	61				
1029	ASSISTANT	3	4	5			105	111	901	13					109	303	904	909	914	61	63
1030	ASSOCIATES	4	8	5		4	303	914	918						904	909	61				
1031	ASSURED	2	4	5		4	110	902	27						606	904	909	51	61		
1032	AUDIENCES	3	3	6		1	105	111	11	63					906	909					
1033	AUDITION	3	3	4			308	722							303	906					
1034	AUGUST	2	2	2			807	2							803	2	904	906			
1035	AUTHORITY	4	4	5			611	919							608	713	909				
1036	AUTHORS	2	4	3	1		917	919							713						
1037	AWARD	2	5	3			110	202	401						622	909					
1038	AWAY	2	4	3		1	202	401	901						909	70					
1039	BALANCED	2	7	7	1		901	918	31	65					606	909	51				
1040	BARR	1	3	3			2	901							2	909					

RANK NO	ALPHABET	INTENSE	G_STROKE	S_STROKE	G_CLASS	SW_CLASS	G 1	G 2	G 3	G 4	G 1	G 2	G 3	G 4	SW 1	SW 2	SW 3	SW 4	SW 1	SW 2	SW 3
1201	LEVELS	2	5	5	1	1	901	917	74						909						
1202	LIGHT	1	3	3	1	1	901	79							909	911					
1203	LIGHTS	1	4	4	1	1	901	918	79						909	911					
1204	LIKELY	2	4	4			709	903							708	909					
1205	LINES	1	4	4	1	1	901	79							909	911					
1206	LISTENERS	3	6	5	1		901	917	66						303						
1207	LORD	1	3	4			110	2							2						
1208	LOSE	1	3	3	1	1	71								903						
1209+	LOT	1	3	3	1	1															
1211	LOWER	2	3	3	1	1															
1212	LUBBOCK	2	4	4			2	72							2	903					
1213	MAJESTIC	3	8	6	1		901	915							303	909					
1214	MANAGERIAL	5	5	6			106	725	901	27					104	909					
1215	MANAGERS	3	5	5			106	901	917	27					104	303	909				
1216	MANUALS	3	3	6		1	106	725	917						903	909					
1217	MARCH	1	4	3			2	901							803	2	909				
1218	MARKETS	2	7	6	1		901	918							303	909					
1219	MASTER'S	2	6	6	1	1	901	917							909						
1220	MENGL	2	4	3			2	901							2						
1221	MENTION	2	2	3			106	722							106						
1222	MERGER	2	6	4	1		901	27							104	909					
1223	METAL	2	4	4	1	1	901								909						
1224	MILWAUKEE	3	3	3		2	802	2	901						2	801					
1225	MISS	1	3	2	1		901	918							303						
1226	MISSOURI	3	2	2		2	810	2							808	2					
1227	MODEL	2	4	4	1	1															
1228	MODEST	2	6	5	1		901	918	66						303						
1229	MODIFICATION	5	5	7			604								604						
1230	MODIFICATIONS	5	6	8			604	913							604						
1231	MOLDED	2	4	5			109								105	606	51				
1232	MONDAY	2	3	3			804	910	2						802	903	2				
1233	MORNING	2	3	6	3		106	605							610						
1234	MOVING	2	5	5			605	910							610	903					
1235	NEAR	1	3	3		1	306	901							909	31					
1236	NEARBY	2	4	4	4	4	306	901							909	31					
1237	NEARLY	2	4	4			306	709	901						708	909	31				
1238	NEGOTIATE	5	9	6		2	303	901							909						
1239++	NICKEL	2	4	3	1		901	51							303						

+Word No. 1210 "Louis" was merged with Word No. 1372 "St." (St. Louis).

++Word No. 1240 "No." was deleted as the word "number" occurred on the 1,000 word list (No. 100).

RANKNO	ALPHABET	INTENSE	G_STROKE	S_STROKE	G_CLASS	SW_CLASS	G 1	G 2	G 3	G 4	G 1	G 2	G 3	G 4	SW 1	SW 2	SW 3	SW 4	SW 1	SW 2	SW 3
1401	TELLING	2	5	5			605	901							610	909					
1402	TEMPTED	2	2	5			101	104	11						109	606	51				
1403	TERMINALS	3	5	6			106	704	901	917					106	909					
1404	TESTED	2	4	6			101	901	918	11	66				606	909	51				
1405	THEORY	3	4	4		1	306	901	919						909						
1406	THIRD	1	3	1			110	901	919						806						
1407	THURSDAY	2	3	3			804	2	917	919					802	2					
1408	TICKET	2	5	3	1		901								303						
1409	TORN	1	4	4	1	1															
1410	TOURIST	2	6	5	1		901	917	66						303						
1411	TRANSPORTATION	4	6	8			308	409	713	722					407	909					
1412	TRENCHES	2	6	6	1	1	901	915							902	909					
1413	TRIBUTE	2	4	5			724	901							303						
1414	TUESDAY	2	3	3			804	2	71						802	2					
1415	TURNS	1	4	5		1	704	901	918						909						
1416	TV	2	3	2			805								805						
1417	TYPED	1	4	5	1		901								606	909	51				
1418	UNIQUE	2	5	4		1	302	901							909						
1419	UNPRECEDENTED	5	7	10			101	105	507	901	917	11	13	63	102	606	909	11	51		
1419	UNPRECEDENTED	5	7	10			66														
1420	UNSOLD	2	4	5			109	507	914	64					105						
1421	UNUSUAL	4	7	6		1	302								903						
1422	USABLE	3	3	3			302	701	32						701	904					
1423	USUALLY	4	6	5		1	302	709	901						908	909	904				
1424	UTENSILS	3	7	5			105	302	901	917	29				109	910					
1425	VACANCY	3	6	6	1	1	901	918							909						
1426	VACATIONING	4	7	7			605	722	901						604	610	909				
1427	VENDORS	2	4	5			108	917	38						107	909	63				
1428	VERSIONS	2	5	6		1	722	901	915						909						
1429	VISIT	2	5	3	1		901	913							303						
1430	VIVID	2	4	3	1		901								303						
1431	VIVIDLY	3	5	4			709	901	902						303	708	909				
1432	VOLUME	2	5	5	1	1	72								903						
1433	VOLUMES	2	6	6	1	1	918	72							903						
1434	WAR	1	3	3		1	202														
1435	WARRANTS	2	6	5			108	202	901	918					107						
1436	WEDNESDAY	2	4	4			202	804	2	901	918				802	2	909				
1437	WHATEVER	3	4	5	4	4	901	914							909						
1438	WHOLE	1	4	4	1	1															
1439	WHOLESALE	2	7	7	1	1	901	917							909						
1440	WHOM	1	4	4	1	1															

RANKNO	ALPHABET	INTENSE	G_STROKE	S_STROKE	G_CLASS	SW_CLASS	G 1	G 2	G 3	G 4	G 1	G 2	G 3	G 4	SW 1	SW 2	SW 3	SW 4	SW 1	SW 2	SW 3
1441	WIFE	1	3	3		1	202	9C1							909						
1442	WILLING	2	3	3	4	4	605								610						
1443	WIN	1	3	2			202	9C1							303						
1444	WINNING	2	5	4			202	605	9C1						303	610					
1445	WISE	1	3	3		1	202	9C1	916						909						
1446	WOMAN	2	3	3			106	2C2							106	63					
1447	WOMEN	2	3	2			106	2C2	9C1						106	303	63				
1448	WONDER	2	4	4			1C8	2C2							107	63					
1449	WONDERED	2	4	6			1C8	110	2C2	11					107	606	51	63			
1450	WORKED	1	3	4	4	4	202								606	51					
1451	WORTH	1	3	2	3	3	202														
1452	WROTE	1	3	3	1	1															
1453	XEROX	2	5	6			204	2	9C1	917	27				2	909	21				
1454	NEWYORK	2	3	2		2	802	2	77						801	2	909				
1455	YOUNG	1	3	2			519								515						
1456	10000	2	1	1			8C9								804						
1457	27TH	1	1	1			8C8								806						
1458	500	2	1	1			8C9	9C8							804	901					
	CENTSX	1	4	1			1C8	9C1	914	918					804						
	PERCENTX	2	1	2			809								804						

Table B.1. Gregg DJ Shorthand Frequencies and Rankings for the Cumulative Word Count of 3,000 Running Shorthand-Countable Words by Methods of Writing and Shorthand Principles Within Theory Words

Cumulative Word Count	Methods of Writing								Shorthand Principles Within Theory Words*																					
	Alphabetic		Abbreviated		Brief Forms		Brief Form Der.		Blends		Consonants		Vowels		Word Beg. Disj.		Word Beg. Joined		Word End. Disj.		Word End. Joined		Miscellaneous		Joinings		Undeclareds	
	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R
100	23	2	-	4	49	1	4	3	8	3	6	5.5	4	7	1	9.5	7	4	1	9.5	6	5.5	2	8	47	1	13	2
200	49	2	-	4	95	1	5	3	19	3	15	4.5	9	7	2	10	10	6	4	8	15	4.5	3	9	110	1	27	2
300	83	2	-	4	138	1	8	3	23	3	21	4	11	7	3	9.5	18	5.5	6	8	18	5.5	3	9.5	175	1	45	2
400	117	2	-	4	176	1	11	3	31	3	29	4	16	7	3	9.5	26	6	9	8	28	5	3	9.5	241	1	55	2
500	146	2	-	4	226	1	13	3	44	3	31	5	17	7	3	10	33	4	11	8	29	6	6	9	298	1	75	2
600	172	2	-	4	271	1	16	3	60	3	33	5	21	7	3	10	39	4	16	8	32	6	7	9	377	1	90	2
700	188	2	-	4	306	1	18	3	69	3	42	6	28	7	3	10	47	4	27	8	44	5	12	9	457	1	108	2
800	216	2	-	4	354	1	20	3	78	3	47	6	33	7	3	10	51	4	32	8	49	5	12	9	506	1	123	2
900	246	2	-	4	397	1	23	3	84	3	52	6	40	7	3	10	54	5	33	8	57	4	14	9	567	1	137	2
1000	271	2	-	4	445	1	24	3	93	3	58	6	45	7	3	10	60	5	39	8	61	4	17	9	618	1	146	2
1100	300	2	-	4	492	1	28	3	100	3	59	6	48	8	3	10	64	5	50	7	65	4	19	9	669	1	160	2
1200	331	2	-	4	535	1	28	3	106	3	60	6	58	7	4	10	71	5	50	8	76	4	19	9	735	1	177	2
1300	357	2	-	4	578	1	32	3	122	3	66	6	63	7	4	10	77	5	57	8	84	4	20	9	807	1	190	2
1400	395	2	-	4	614	1	34	3	128	3	72	6	66	7	5	10	81	5	61	8	92	4	22	9	875	1	214	2
1500	433	2	1	4	654	1	37	3	135	3	77	6	67	7	5	10	88	5	64	8	94	4	24	9	947	1	229	2
1600	467	2	1	4	697	1	37	3	150	3	79	6	71	7	5	10	96	5	65	8	99	4	24	9	1021	1	255	2
1700	495	2	1	4	741	1	42	3	163	3	86	6	74	7	5	10	102	4	68	8	101	5	24	9	1076	1	264	2
1800	519	2	1	4	788	1	45	3	171	3	93	6	79	7	5	10	109	4	70	8	106	5	25	9	1145	1	278	2
1900	548	2	1	4	828	1	49	3	182	3	97	6	87	7	6	10	115	4	74	8	113	5	26	9	1220	1	294	2
2000	566	2	1	4	876	1	52	3	189	3	99	6	92	7	6	10	129	4	80	8	125	5	26	9	1288	1	312	2
2100	591	2	1	4	924	1	53	3	195	3	101	6	97	7	6	10	138	4	82	8	136	5	27	9	1345	1	330	2
2200	617	2	2	4	965	1	56	3	205	3	102	6	99	7	7	10	145	5	87	8	147	4	29	9	1409	1	350	2
2300	644	2	2	4	1002	1	62	3	217	3	105	6	103	7	7	10	151	5	92	8	160	4	30	9	1485	1	378	2
2400	669	2	3	4	1044	1	65	3	223	3	111	6	107	7	7	10	158	5	95	8	175	4	33	9	1561	1	398	2
2500+	700	2	3	4	1079	1	71	3	236	3	114	7	117	6	11	10	167	5	97	8	183	4	33	9	1628	1	420	2
2600	715	2	3	4	1122	1	73	3	252	3	119	7	123	6	14	10	176	5	110	8	195	4	33	9	1698	1	448	2

Table B.1. (continued)

Cumulative Word Count	Methods of Writing								Shorthand Principles Within Theory Words*																	
	Alphabetic		Abbreviated		Brief Forms		Brief Form Der.		Blends		Consonants		Vowels		Word Beg. Disj.		Word Beg. Joined		Word End. Disj.		Word End. Joined		Miscellaneous		Joinings		Undeclareds	
	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R
2700	737	2	3	4	1167	1	73	3	271	3	124	7	126	6	16	10	186	5	112	8	205	4	35	9	1768	1	473	2
2800	762	2	4	4	1209	1	77	3	282	3	127	7	129	6	16	10	198	5	116	8	210	4	35	9	1839	1	494	2
2900	791	2	4	4	1255	1	80	3	293	3	131	7	131	6	16	10	204	5	119	8	215	4	35	9	1897	1	507	2
3000	825	2	4	4	1297	1	81	3	307	3	136	7	138	6	16	10	208	5	122	8	218	4	35	9	1957	1	528	2

*If two or more shorthand principles were used in forming a word, the word was counted in each category.

+All rankings stabilized.

Table B.2. SW Century 21 Shorthand Frequencies and Rankings for the Cumulative Word Count of 3,000 Running Shorthand-Countable Words by Methods of Writing and Shorthand Principles Within Theory Words

Cumulative Word Count	Methods of Writing								Shorthand Principles Within Theory Words*																			
	Alphabetic		Contr./ Corres.		Speed Forms		Speed Form Der.		Bends and Blends		Consonants		Vowels		Word Beg. Disj.		Word Beg. Joined		Word End. Disj.		Word End. Joined		Miscellaneous		Joinings		Undeclareds	
	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R	f	R
100	33	2	1	4	46	1	5	3	10	3	-	8	3	5	1	6	-	8	9	4	-	8	-	8	35	1	15	2
200	67	2	1	4	84	1	12	3	22	3	-	10	8	5	2	7.5	1	9	19	4	4	6	2	7.5	77	1	35	2
300	110	2	1	4	121	1	16	3	28	3	-	10	16	5	3	8	8	6	26	4	5	7	2	9	124	1	45	2
400	148	2	1	4	156	1	19	3	36	3.5	-	10	23	5	3	8	13	6	36	3.5	11	7	2	9	175	1	60	2
500+	182	2	3	4	197	1	23	3	49	3	-	10	30	5	4	9	16	6	42	4	11	7	5	8	214	1	72	2
600	207	2	4	4	235	1	30	3	65	3	-	10	40	5	4	9	17	6	56	4	12	7	6	8	259	1	86	2
700	227	2	7	4	260	1	40	3	78	3	1	10	53	5	4	9	19	6	77	4	15	7	11	8	311	1	105	2
800	260	2	7	4	301	1	43	3	94	3	1	10	57	5	4	9	21	6	84	4	17	7	13	8	347	1	112	2
900	298	2	9	4	336	1	47	3	102	3	1	10	65	5	4	9	24	6	89	4	21	7	16	8	386	1	122	2
1000	334	2	9	4	372	1	50	3	116	3	1	10	69	5	5	9	26	6	97	4	22	7	19	8	424	1	132	2
1100	367	2	11	4	407	1	56	3	123	3	1	10	77	5	5	9	30	6	110	4	23	7	21	8	457	1	138	2
1200	406	2	11	4	443	1	60	3	133	3	1	10	81	5	6	9	38	6	112	4	27	7	21	8	501	1	150	2
1300	435	2	11	4	483	1	68	3	146	3	1	10	86	5	6	9	42	6	119	4	32	7	22	8	548	1	168	2
1400	476	2	11	4	516	1	73	3	156	3	1	10	91	5	6	9	44	6	123	4	37	7	24	8	605	1	182	2
1500	514	2	11	4	553	1	79	3	168	3	1	10	95	5	6	9	48	6	128	4	38	7	26	8	644	1	188	2
1600	548	2	11	4	593	1	81	3	182	3	1	10	100	5	6	9	50	6	139	4	43	7	27	8	694	1	202	2
1700	579	2	11	4	633	1	88	3	196	3	1	10	107	5	6	9	52	6	147	4	44	7	27	8	735	1	212	2
1800	613	2	11	4	678	1	91	3	206	3	1	10	111	5	6	9	58	6	149	4	45	7	29	8	778	1	222	2
1900	642	2	12	4	717	1	98	3	217	3	1	10	117	5	8	9	64	6	157	4	49	7	30	8	823	1	235	2
2000	664	2	12	4	760	1	111	3	228	3	1	10	122	5	8	9	71	6	168	4	55	7	31	8	857	1	241	2
2100	687	2	12	4	803	1	117	3	236	3	1	10	132	5	9	9	75	6	177	4	58	7	31	8	895	1	249	2
2200	718	2	14	4	841	1	121	3	249	3	1	10	140	5	10	9	78	6	187	4	60	7	33	8	932	1	258	2
2300	744	2	14	4	875	1	126	3	261	3	1	10	154	5	10	9	82	6	197	4	65	7	34	8	976	1	267	2
2400	773	2	14	4	912	1	131	3	272	3	1	10	164	5	10	9	85	6	205	4	70	7	37	8	1038	1	282	2
2500	814	2	14	4	948	1	137	3	280	3	2	10	170	5	13	9	91	6	210	4	75	7	38	8	1088	1	289	2
2600	839	2	14	4	983	1	145	3	294	3	2	10	180	5	16	9	94	6	231	4	79	7	39	8	1125	1	308	2

Table B.2. (continued)

Cumulative Word Count	Methods of Writing: Alphabetic f	Alphabetic R	Contr./Corres. f	Contr./Corres. R	Speed Forms f	Speed Forms R	Speed Form Der. f	Speed Form Der. R	Shorthand Principles Within Theory Words*: Bends and Blends f	Bends and Blends R	Consonants f	Consonants R	Vowels f	Vowels R	Word Beg. Disj. f	Word Beg. Disj. R	Word Beg. Joined f	Word Beg. Joined R	Word End. Disj. f	Word End. Disj. R	Word End. Joined f	Word End. Joined R	Miscellaneous f	Miscellaneous R	Joinings f	Joinings R	Undeclareds f	Undeclareds R
2700	866	2	14	4	1024	1	146	3	309	3	2	10	187	5	18	9	101	6	238	4	85	7	41	8	1173	1	324	2
2800	885	2	17	4	1056	1	153	3	326	3	3	10	196	5	18	9	109	6	249	4	89	7	41	8	1221	1	338	2
2900	916	2	18	4	1094	1	161	3	336	3	3	10	205	5	18	9	113	6	258	4	90	7	41	8	1258	1	348	2
3000	953	2	19	4	1134	1	168	3	344	3	3	10	209	5	18	9	118	6	265	4	91	7	41	8	1306	1	359	2

*If two or more shorthand principles were used in forming a word, the word was counted in each category.

+All rankings stabilized.

APPENDIX C

MATERIALS USED IN ANALYSIS OF THE SHORTHAND TEXTBOOKS

CARD-IMAGE PRINTOUT OF GREGG DJ TEXTBOOK LESSON NO. 20

(+ indicates presented words, * connected-copy words)

+NOW SOUND ACCOUNT ALLOW FOUND LOUD DOUBT POUND HOUSE PROUD AMOUNT OUNCE
NEITHER BROTHER EITHER OTHER MOTHER RATHER ANOTHER TOGETHER LEATHER GATHER
WHETHER BOTHERED CONCERN CONSIDERABLE CONFIRM CONSIST CONTROLLED CONFUSING
CONFERENCE CONTRACT CONCRETE COMPOSE COMBINE COMPARE COMPLETE COMPUTER
COMBINED COMPLY COMPLAINT ACCOMPLISH CONNECT CONNOTE COMMITTEE CONNECTION
COMMERCE ACCOMMODATE
*DEAR DOCTOR BROWN WOULD YOU LIKE TO HAVE GAS HEATING EQUIPMENT VALUED AT $350
PLACED IN YOUR HOUSE FREE OF CHARGE EQUIPMENT THAT WILL SAVE YOU MORE THAN
PERCENTX ON YOUR PRESENT FUEL COSTS HERE IS YOUR OPPORTUNITY THIS OFFER IS MADE
POSSIBLE BY THE UNIQUE GAS BURNER RENTAL PLAN OF THE UNITED GAS COMPANY UNITED
WISHES TO CONVINCE YOU THAT YOU WILL BE ABLE TO BUY EFFICIENT GAS FUEL FOR
CONSIDERABLY LESS THAN YOU MUST PAY FOR OTHER COMPETITIVE FUELS FOR THE
COMPLETE STORY MAIL THE ENCLOSED CARD TO OUR ADVERTISING DEPARTMENT AFTER ALL
YOU HAVE NOTHING TO LOSE AND A GREAT DEAL TO GAIN SINCERELY YOURS
DEAR SIR WE HAVE OFTEN ANNOUNCED IN OUR ADVERTISING THAT TOWN WATCHES ARE SO
WELL CONSTRUCTED THAT THEY WILL LAST FOR AGES NOW WE HAVE CONCRETE PROOF OF THIS
CLAIM RECENTLY WE RECEIVED IN THE MAIL A TOWN WATCH THAT WE HAD MANUFACTURED IN
ACCOMPANYING THE WATCH WAS A LETTER FROM THE OWNER SAYING THIS WATCH WAS
ORIGINALLY MY GRANDFATHER'S HE LEFT IT TO MY FATHER MY FATHER WAS A TRAIN
CONDUCTOR AND FOR MORE THAN YEARS THE WATCH WAS ALWAYS WITH HIM IT SEEMS THAT
THE WATCH HAD STOPPED BECAUSE THE PRESENT OWNER HAD DROPPED IT AND HE WONDERED
WHETHER WE COULD REPAIR IT WE REPLACED A SIMPLE COMPONENT AND THE WATCH
COMMENCED TICKING AGAIN WE HAVE NO DOUBT THAT IT WILL KEEP TICKING FOR ANOTHER
YEARS WHEN YOU ARE IN THE MARKET FOR A SPECIAL GIFT FOR YOUR MOTHER FATHER
BROTHER SISTER OR ANY OTHER PERSON YOU LOVE GIVE HIM OR HER A TOWN WATCH IT IS
A GIFT THAT ANY PERSON WILL BE PROUD TO WEAR SINCERELY YOURS
DEAR SIR CONTRARY TO ANY COMMENTS YOU MAY HAVE HEARD RECENTLY THE BUILDING
COMMITTEE HAS NOT ASSIGNED THE CONTRACT FOR THE CONSTRUCTION OF THE BOY SCOUT
HOUSE TO ANY CONTRACTOR THE COMMITTEE IS CONSIDERING BIDS FROM CONTRACTORS AND
IT HOPES TO COMPLETE THE WORK ON EITHER JULY OR YOU WILL BE NOTIFIED WHEN THE
COMMITTEE HAS REACHED A DECISION SINCERELY YOURS
DEAR HOWARD AS YOU HAVE NO DOUBT HEARD THE OPERATIONS COMMITTEE HAS DECIDED TO
PLACE ME IN CHARGE OF OUR LEATHER FACTORY IN ATLANTA I WILL BE MOVING TO ATLANTA
WITH MY MOTHER AND FATHER EITHER IN MAY OR JUNE DEPENDING ON THE SPEED WITH
WHICH I CAN COMPLETE MY WORK HERE I NOW FACE THE TASK OF SELLING MY HOUSE HERE
AND BUYING ANOTHER ONE IN ATLANTA SELLING MY HOUSE HERE WILL NOT BE A PROBLEM
BUT I WILL NEED YOUR HELP IN FINDING ONE IN ATLANTA WOULD YOU BE KIND ENOUGH TO
CALL A REPUTABLE AGENT IN ATLANTA AND ASK HIM TO SEND ME A LIST OF HOUSES FOR
SALE I KNOW I CAN COUNT ON YOUR HELP SINCERELY
DEAR ROY NO DOUBT YOU ARE PLANNING TO GO TO THE CONFERENCE OF ADVERTISING
MANAGERS THAT WILL BE HELD IN UTICA ON JUNE I AM GOING TO DRIVE TO THE
CONFERENCE WITH MY MOTHER AND FATHER WHO PLAN TO SPEND THE WEEKEND IN UTICA
WHERE WE HAVE RELATIVES WOULD YOU LIKE TO DRIVE UP WITH US IF SO WE WOULD BE
DELIGHTED TO HAVE YOU SINCERELY

CARD-IMAGE PRINTOUT OF SW CENTURY 21 TEXTBOOK LESSON NO. 9

(+ indicates presented words, * connected-copy words)

+AT HIS TO US TO OUR ON THAT LAST LINES SELLING
*DEAR KATE I WISH WE COULD SHOW YOU THE SHORT ANSWERS WE RECEIVED TO OUR LETTERS ON LEISURE THE ENCLOSED SHEETS ARE A FEW ON THAT ISSUE THAT WERE SENT TO US LAST WEEK WOULD YOU LIKE TO DISCUSS THE ISSUES IT IS THE CUSTOM TO CONSIDER DIFFICULT QUESTIONS OF THIS KIND WELL IN ADVANCE OF SHIPPING YOU WOULD ACCEPT THAT WOULD YOU NOT RAY DEAR ANN AS YOU KNOW OUR ASSOCIATION IS ASKING THE THIRD DIVISION TO CONSTRUCT AN AIR CONDITIONED TELEVISION STATION IT WILL AFFECT DIRECT LINES WITH DALLAS WE SHALL SHARE IN THE COSTS SINCE WE FAVOR THE ADDITIONAL STATION IN OUR CITY SUE DEAR KAY DO YOU KNOW IF YOU SHOULD WANT TO REQUEST STOCK WE CAN START SELLING IT SOON RAY IS SURE THOSE AT HIS FACTORY WILL WISH TO HAVE STOCK A FEW EVEN HAVE THE NECESSARY CASH I WOULD VOTE AS HE WOULD WISH SUE
+CERTIFICATE CERTIFY CONTACT CONTRACT CONTROL CONVENTION DOWN ELECT ENOUGH FOUND NEXT NOTICE VALUE AND HAVE SEND US AS YOU WILL DEALER ASSIST OFFICERS CENTRAL LEADERS
*THE CERTIFICATE IN THIS ENVELOPE IS THE CONTRACT THAT WILL CERTIFY YOU TO THE CONVENTION LEADERS THEY WILL THEN CONTACT THE TELEVISION STATIONS DOWN AT THEIR CENTRAL OFFICES WE HAVE FOUND THESE CONTACTS TO HAVE VALUE AS WE ELECT NEW LEADERS THERE ARE ENOUGH INDIVIDUALS TO CONTROL THE NEXT CONVENTION AS YOU WILL NOTICE RAY SHOULD HAVE A LIST OF RESPONSES READY IN HIS OFFICE I SHOULD HAVE A FEW OF THOSE TO DEVELOP TOO SHALL WE SEND YOUR LIST TO YOU HE SAID YOU COULD SEND US THE RECORD OF OFFICERS AND HAVE THE DEALER ASSIST YOU
+BACK BASIS BELIEVE BILL I COULD I BELIEVE LEFT WAR BREAK BRAKE BOARD BUYING BEST
*I BELIEVE THAT BASIS IS ALL WE NEED TO REQUIRE THE INVITATIONS NO BILL IS LEFT ON THAT WORK WHEN YOU DELIVER THE QUANTITY AS TO THE BOARD IT IS STORED BACK OF THE SHEETS AND ENVELOPES I COULD SEE NO BREAK IN THE SELLING WAR WE SHOULD LIKE TO SEE ONE IT IS THE BEST FACT OF ANY WE HAVE TO USE IN BUYING OR INVESTING
+ABOUT BE BEEN BY BUSINESS I WILL NOT BE ABLE TO BE I HAVE BEEN THIS WILL BE I WILL BE THERE WILL BE BY THE I HAVE BEEN ABLE WITH HIS READ REED RALLY DIFFICULTY DRIVE REAL BOOK BONDS BETTER BUT
*I WILL BE AT THE RALLY TO INVITE ALL TO THE CONVENTION I HAVE BEEN IN YOUR CITY BUT ONE DAY I SHOULD LIKE TO BE AT THE EVENT IT IS ABOUT TWO WEEKS LATER THAN THE CONVENIENCE I LIKED WHAT BUSINESS CORRESPONDENCE WOULD YOU LIKE THE CORRESPONDING SECRETARY TO WRITE AFTER THIS ACCORDING TO THE INDUSTRY IT IS THE EFFECT OF OUR SUCCESS THIS WILL BE A FINE RESULT THAT OUR ASSOCIATE WON THAT IS NO BOOK TO READ AT THIS HOUR HE WAS HAVING DIFFICULTY WITH OUR BONDS I BELIEVE HE WILL LIKE TO HAVE BACK THE ORDERS YOU RECEIVED IT IS THE BEST QUALITY WE HAVE TO SEND WHEN WILL THE COUNT BE ALL RIGHT WITH YOU I WANTED ABOUT THREE OF YOU TO RETURN IF CONVENIENT I HAVE BEEN ABLE TO ASSIST RAY A LITTLE WITH HIS BUSINESS I WILL NOT BE ABLE TO ASSIST ANYONE THROUGH THE NEXT WEEK OR TWO I SHALL BE BACK TO SEE YOU WHENEVER THERE IS A REAL NEED I WAS ABOUT TO DRIVE BY THE OFFICE YOU WANT THERE WILL BE A BETTER BOOK

APPENDIX D

DESCRIPTION OF GREGG DJ AND SW CENTURY 21 SHORTHAND SYSTEMS

MEMORY-FORM WORDS COMMON AND UNIQUE TO GREGG DJ AND SW CENTURY 21 SHORTHAND SYSTEMS WITH MELLINGER[a] ORDER OF FREQUENCY

Memory-Form Words Common to Gregg and South-Western		Memory-Form Words Unique to Gregg	Memory-Form Words Unique to South-Western	
**a--7	satisfactory--499	acknowledge--876	able--213	fact--320
**about--75	satisfy--3,737	between--262	accept--403	figure--1,329
advantage--569	*send--107	big--860	accord--+	form--114
advertise--+	*shall--339	but--62	active--1,356	found--407
after--140	*short--565	character--3,510	activity--1,043	go--228
**am--92	situation--501	circular--1,902	administer--++	graduate--1,762
**an--33	*state--198	could--119	advance--703	ground--1,516
**and--4	success-463	during--109	advice--1,487	has--32
**are--19	suggest--347	every--179	advise--268	he--80
**at--24	**than--91	for--8	affect--1,357	hope--104
**be--11	**thank--78	general--222	agriculture--2,383	hospital--785
**business--87	that--14	gentlemen--168	amount--124	if--28
**by--25	**the--1	glad--305	announce--1,652	immediately--385
*can--40	their--82	gone--1,624	anxious--1,488	improve--1,253
company--64	**them--84	I--23	any--37	individual--465
correspond--++	there--58	idea--803	appreciate--143	industry--386
correspondence--938	**thing--1,349	merchant--4,738	approximate--1,986	information--54
difficult--746	think--362	morning--1,065	as--18	inspect--4,677
*enclose--1,918	throughout--533	Mr.--38	associate--2,544	instruct--4,086
envelope--381	*time--47	Mrs.--311	attention--214	interest--127
*ever--747	*value--293	never--715	been--43	invitation--1,520
experience--319	*very--45	object--++	certificate--518	invite--297
*from--31	was--41	opinion--697	certify--++	issue--553
*good--151	**well--142	ordinary--3,680	chairman--1,145	just--132
govern--++	what--121	over--134	change--239	letter--53
great--353	when--63	progress--762	committee--149	material--199
*have--20	where--192	publication--675	condition--667	more--60
*his--102	which--27	purpose--555	consider--454	mortgage--1,336
**hour--1,929	why--373	put--532	construct--++	necessary--129
*how--158	**will--15	railroad--2,076	contact--238	notice--468
immediate--804	with--21	recognize--1,797	contain--1,666	number--100
**importance--1,020	won--3,444	responsible--919	contract--290	organization--523
**important--208	work--89	several--267	contribute--1,827	please--42
**in--5	worth--1,436	should--52	control--390	problem--312
*is--12	**would--30	soon--195	convenience--391	product--525
**it--22	**your--10	speak--2,205	convenient--818	prompt--662
*manufacture--2,313		street--687	convention--1,321	provide--216
merchandise--714		subject--346	count--2,748	quality--477
must--120		such--98	custom--3,537	receive--401
**newspaper--1,941		they--55	deliver--4,540	record--406
next--202		this--13	department--105	report--169
**not--29		those--183	develop--1,174	require--395
**of--2		under--113	direct--994	respect--918
one--46		upon--279	discuss--528	response--1,003
**opportunity--174		use--95	distinct--4,567	result--514
**order--72		were--71	distinguish--++	return--136
organize--++		wish--177	distribute--2,421	secretary--1,424
**our--17		world--327	down--684	serve--422
*out--86		year--77	economic--1,210	ship--922
**part--176		yesterday--2,221	economy--3,985	situate--+
particular--400		yet--794	educate--++	special--147
**present--175		you--6	effect--573	specific--527
**probable--3,704			elect--1,916	specify--++
**public--303			employ--3,245	stand--1,197
publish--2,186			enough--634	sure--181
quantity--1,069			equip--+	then--200
question--469			establish--1,212	want--191
regard--402			event--661	while--288
regular--442			expect--560	
request--182			expense--649	
TOTAL: 96 words		TOTAL: 52 words	TOTAL WORDS: 118 words	

*Identical shorthand alphabetic characters. **Identical shorthand outlines.

+Not on Mellinger list. ++Occurred less than four times on Mellinger list.

[a]Morris Mellinger, Basic Vocabulary for Written Business Office Communications, (Chicago: Chicago State College Publications Office, 1970).

DESCRIPTION OF GREGG DJ AND SW CENTURY 21 SHORTHAND SYSTEMS

The following description is intended to provide a guide to comparing the two systems. Textually declared principles are presented first with a breakdown by each major category. Within each major category, the principles are presented as identical, similar, or unique according to the guidelines presented in Chapter IV. Textually undeclared principles are grouped by major category after the textually declared principles. The major categories include:

Theory Background

Basic Vowel Expression (includes table and subsequent expression of each vowel with basic vowel guidelines)

Consonant and Digraph Expression (includes table and subsequent expression of each character)

Vowel Principles (V)

Consonant Principles (C)

Bends and Blends (B)

Word Beginnings--Disjoined (WBD)

Word Beginnings--Joined (WBJ)

Miscellaneous Shorthand Principles (M)

Writing and Joining Principles (J)

Auxiliary Rules (A)

Writing Accuracy and Precision Guidelines

Textually Undeclared Principles (broken into above categories).

Beginning with the vowel principle grouping, an asterisk (*) appears at the beginning of the principle if the principle is not tallied in the decision points for analysis in the Mellinger 1,000 words. A cross

reference (CR) is indicated at the end of a principle if additional information relative to the principle can be found in another category or a reference to the other system is desirable. "Observations" are placed at the point of occurrence in relationship to the other system but are tallied under undeclared principles in the 1,000 word analysis. The number in parentheses after the word example indicates the 100-word frequency grouping of that word on the Mellinger list if the word occurred on the Mellinger list or had enough frequencies on the list to be assigned a grouping.

At the end of the statement of the principle, the page number and and reference letter are given with the following references cited:

(a) Louis A. Leslie et. al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973).

(b) Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

(c) Edward L. Christensen and R. DerMont Bell, Century 21 Shorthand, Theory and Practice, book 1 (Cincinnati: South-Western Publishing Co., 1974).

(d) Edward L. Christensen, Century 21 Shorthand Dictionary (Cincinnati: South-Western Publishing Co., 1976).

(e) Robert L. Grubbs and Estelle Popham, Gregg Shorthand for Colleges, Speed Building, Diamond Jubilee Series (New York: Gregg Division/McGraw-Hill Book Co., 1976).

(f) John Robert Gregg, Louis A. Leslie, Charles E. Zoubek, Most Used Word and Phrases, Diamond Jubilee Series (New York: Gregg Division/ McGraw-Hill Book Co., 1963).

(g) B. Scot Ober, "A Word to the Whys: A Discussion of the Construction of Gregg Shorthand Outlines," Business Education World 55 (May-June 1975):14, pp. 14-15, 24.

(h) Louis A. Leslie, et al., Gregg Shorthand for Colleges, Transcription, Diamond Jubilee Series, (New York: Gregg Division/McGraw-Hill Book Co., 1975).

(i) Irol W. Balsley and Robert E. Hoskinson, Century 21 Shorthand, Intensive Dictation and Transcription, Collegiate Series, (Cincinnati: South-Western Publishing Co., 1974).

DESCRIPTION OF GREGG DJ AND SW CENTURY 21 SHORTHAND SYSTEMS

PART I. TEXTUALLY DECLARED PRINCIPLES

THEORY BACKGROUND

Gregg

1. Only the sounds heard in a word are written. Silent letters are omitted. (17a)

   size(7) 

   right(4) 

   may(1) 

2. Vowels and consonants are joined and follow in their natural order. (197a)

   portfolio(37) 

   radio(11) 

3. Observation: A vowel is a circle or half circle; a consonant is a straight stroke, curved stroke, or a dot.

   team(19) 

   hose(47) 

South-Western

1. Use only the sounds heard in a word. (2c)

   size(7) 

   right(4) 

   may(1) 

2. Strokes are combined in the order sounds are uttered in pronouncing the word. (2b)

   portfolio(37) 

   radio(11) 

3. A vowel is a circle or half circle; a consonant is a straight stroke, curved stroke, or a dot. (2b)

   team(19) 

   hose(47) 

BASIC VOWEL EXPRESSION

Basic Vowel Symbols in Gregg DJ and SW Century 21 Shorthand with Memory Forms Expressed by the Symbols

Gregg Vowel	Gregg Symbol	South-Western Vowel	South-Western Symbol	Memory Forms Expressed by Symbols: Gregg	Memory Forms Expressed by Symbols: South-Western
a		a		I	able
e		e			he
i		i		why//	
o		o		of	of
u		u		you, your	your
oo				you, your	

Gregg

Vowel A:

1. a(ā,a,ä sounds): Expressed by a large circle. (17,33a)

   dāy(2) act(11)

   fär(7)

South-Western

Vowel A:

1. a(all sounds): Expressed by a large circle. (11c)

   day(2) act(11)

   far(7)

BASIC VOWEL EXPRESSION
(continued)

Gregg

Vowel A (continued):

2. a (aw sound): Expressed by the o-hook. (44a)

call(2) talk(14)

Vowel E:

3. e(ē,e, obscure vowels e & u): Expressed by a small circle. (18,34a)

mēet(5) rest(10)

earn(25) urge(15)

Vowel I:

4. i(ī sound): Expressed by a large, broken circle. (22a)

hīgh(3) fīle(4)

5. i(ĭ sound): Expressed by a small circle. (34a)

ĭll fĭll(5)

Vowel O:

6. o(ō,o sounds): Expressed by the o-hook. (21,44a)

nōte(3) top(6)

South-Western

Vowel A (continued):

2. a (ô sound): Expressed by the o stroke.(all sounds11c)

call(2) talk(14)

CR: V Expression No. 6

Vowel E:

3. e(all sounds): Expressed by a small circle. (11c)

meet(5) rest(10)

earn(25) urge(15)

Vowel I:

4. i(ī sound): Expressed by a large, broken circle. (11c)

high(3) file(4)

5. i(i sound): A small circle omitted in the body of word. (12c)

ill fill(5)

CR: V Principles Nos. 5, 6

Vowel O:

6. o(all sounds): Expressed by the o stroke. (11c)

note(3) top(6)

CR: V Expression No. 2

Gregg

Vowel U:

7. u(ŭ sound): Expressed by the oo-hook. (70,119a)

cut(12) drug(25)

8. u(ū sound): Expressed by combining e and the oo-hook. (100a)

few(3) unit(7)

CR: V Principles No. 7

Vowel OO:

9. oo(o͞o,o͝o sounds): Expressed by the oo-hook. (30,71a)

room(2) took(19)

Basic Vowel Guidelines

1. Minor Vowels: Vowels sounded only slightly or slurred may be omitted. (23a)

taken(6)

method(10)

South-Western

Vowel U:

7-9. u(all sounds): Expressed by the u stroke. (2,11c)

cut(12) drug(25)

few(3) unit(7)

Observation: oo expressed by the u stroke as oo generally sounded as ü or u̇.

room(2) took(19)

1. The neutral (unstressed) vowel sound is not written in the body of the word outline as it is indistinctly sounded in normal speech. (16c)

taken(6)

method(10)

Basic Vowel Guidelines (continued)

Gregg

2. Observation: Within the body of a word, the basic sounds of a, e, i, o, oo are written.

rate(3) ran(43)

read(7) rest(10)

right(4) risk(9)

role(21) rod

roof(31) rule(16)

CR: V Principles No. 8

3. Observation: All vowel sounds are written at the beginning and ending of outlines unless a shorthand principle occurs.

approved(6)

data(10)

BUT indefinite

South-Western

2. Within the body of a word, all basic sounds of a, e, o, u are written. (9b)

rate(3) ran(43)

read(7) rest(10)

role(21) rod

use(1) ? roof(31)

CR: V Principles No. 5

3. All vowel sounds are written at the beginning and ending of word outlines. (19c)
Observation: unless a shorthand principle occurs.

approved(6)

data(10)

BUT indefinite

BASIC CONSONANT AND DIGRAPH EXPRESSIONS*

Basic Consonant and Digraph Symbols in Gregg DJ and SW Century 21 Shorthand with Memory Forms Expressed by the Symbols

Consonant & Digraph	Gregg Symbol	South-Western Symbol	Memory Forms Expressed by Symbols: Gregg	Memory Forms Expressed by Symbols: South-Western
b			be, by	be, been, by
c	none	none		
d			would	would
f			for	fact, if
g			good	go, good
h			a, an	a, an
j				go, good
k			can	can
l			will, well	well, will
m			am	am, more
n			in, not	in, not
p			put	hope
q	none	none		
r			are, hour, our	are, hour, our
s,z			// is, his	as, his, is
t			it, at	at, it
v			have	have, with
w	+			have, with

BASIC CONSONANT AND DIGRAPH EXPRESSIONS (continued)

(continued)

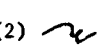
Consonant & Digraph	Gregg Symbol	South-Western Symbol	Memory Forms Expressed by Symbols: Gregg	Memory Forms Expressed by Symbols: South-Western
x	+	none		
y	+	+		
ch			which	change
ng				
sh(zh)			shall	shall, ship
th			the// their, there	the

+A shorthand principle is used in expressing this letter.

Gregg

Consonant C:

Observation: C is expressed by k, as heard in cost; by s, as heard in face.

cost(2)  face(13) 

Consonants G & J:

Observation: G is expressed by j, as heard in generous; by gay, as heard in game.

South-Western

Consonant C:

Observation: C is expressed by k, as heard in cost; by s, as heard in face.

cost(2)  face(13) 

Consonants G & J:

J and g are expressed by the same symbol as the g often has a j sound. (20c)

Gregg

Consonants G & J (continued):

generous(22)

game(15) 

Consonant Q:

Observation: Q is expressed by k plus a short dash underneath the vowel following the w sound.

quite(6) 

quick(18) 

CR: C Principles No. 4

Consonant X:

X is expressed by s written with a slight backward slant. (142a)

box(10)  fix 

CR: C Principles No. 2

Consonant Y:

Y is expressed in connection with the following vowel. See WBJ Nos. 8, 9, 10, 17, and Undeclared WEJ No. 1.

South-Western

Consonants G & J (continued):

job(3) game(15)

generous(22) 

Consonant Q:

Observation: Q is expressed by combining k and the v,w stroke.

quite(6)

quick(18)

CR: Undeclared C Principles No. 2

Consonant X:

Observation: X is expressed by the k-s strokes. At the beginning of the word, it may be written in longhand.

box(10) fix

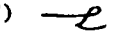
X-ray(44) 

CR: Undeclared C Principles No. 1

Consonant Y:

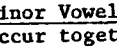
Internal y sound expressed by a small circle. Beginning y expressed in connection with the following vowel. See WBJ Nos. 8, 9, 10, 17, 19, and C Principles No. 1.

BASIC CONSONANT AND DIGRAPH EXPRESSIONS
(continued)

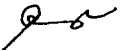
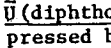
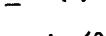
Gregg	South-Western
Digraph CH:	**Digraph CH:**
Ch is expressed by a straight downstroke. (29a)	Ch is expressed by a long upward curve. (23c)
each(1) 	each(1) 
charge(3) 	charge(3) 
Digraph NG:	**Digraph NG:**
Ng is expressed by a short straight stroke slanted downward. (138a)	Ng is expressed by a short straight stroke slanted downward. (32c)
along(5) 	along(5) 
single(8) 	single(8) 
Digraph SH:	**Digraph SH, ZH:**
Sh is expressed by a tiny straight downstroke. (29a)	Sh, zh is expressed by a small downward curve. (19c)
shown(4) 	shown(4)
sheet(7) 	measure(27) 
Digraph TH (Over and Under):	**Digraph TH:**
Th is expressed by small curves written upward. (34a)	Th is expressed by a small curve written upward. (5c)
they(1) 	they(1) 
thorough(2) 	thorough(2) 

VOWEL PRINCIPLES+

Identical

Gregg	South-Western
1. oi: (oy) Expressed by joining the o-hook and the e circle. (84a)	1. oi, oy: Expressed by combining the o and e strokes. (26c)
choice(7) 	choice(7) 
loyal(42) 	loyal(42) 

Similar

2. ow: (ou) Expressed by joining the a stroke and the oo-hook. (105a)	2. ou, ow: Expressed by joining the o stroke on its side with the v,w stroke. (26c)
now(1) 	now(1) 
house(11) 	house(11) 
3. Long i Followed by a Vowel: (also y) Expressed by a small circle within a large circle. (134a)	3. Long i Followed by a Basic Vowel (ia, io, iu): (also y) Expressed by a dot in the long i symbol. (72c)
diameter 	diameter
biennial 	biennial 
prior(5) 	priority(34) 
triumph 	triumph 
hyena	hyena
CR: Undeclared V No. 7	

+Beginning with this grouping, principles were tallied as decision points unless as asterisk (*) precedes the principle.

Unique

Gregg	South-Western
4. ia, ea sounds: Expressed by a large circle with a dot placed within it. (134a)	4. Long i Homophones: Expressed by a dot in the long i symbol to distinguish the shorthand homophones. (72c)
association(4) 	lion  line(2)
area(2) 	quiet(38)  quite(6)
5. Minor Vowels: When two vowels occur together, the minor vowel may be omitted. (193a)	5. Short i in Body of Word: Within the body of a word, the short i sound is not written. (12c)
period(3) 	risk(9)
various(6)	BUT right(10)
6. Omission of Vowel Preceeding -tion: The circle for the vowel sound is omitted when t, d, n, or m is followed by -ation or -ition. (139a)	6. Initial Short i: If the initial short i sound is not part of a word beginning, it is written with a small circle, as in in and im. (51b)
combination(17) 	initial(10) 
edition(7)	eliminated(19)
	BUT income(4) 
7. Ū (diphthong ū sound): Expressed by joining the e circle and the oo-hook.	7. Initial Short i (One Syllable Words): Initial short i is written when in- is part of a one-syllable word. (viiid)
unit(7)	ink
review(3)	inn
CR: Undeclared V No. 2	

VOWEL PRINCIPLES (continued)

Gregg

8. Short u omitted: U is omitted in the body of a word before a straight downstroke, n, or m. (143a)

summer(8) run(10)

rush(22) summed

CR: Undeclared V Nos. 1, 3

South-Western

8. Root Word: The beginning vowel of a root word is written even though a prefix is added. (75c)

ability(22)

AND disability(16)

9. Adjacent e's: In words with an adjacent e sounded, only one e is written to expresses the e sounds. (93c)

reentry

reenact

CONSONANT PRINCIPLES

Gregg

Identical

None

Similar

1. ngk: (nk, nc, nch, nqu, nx) Expressed by a long, straight stroke slanted downward. (138a)

bank(7)

banquet

Unique

2. X: Expressed by a modified s with a slight backward slant. (142a)

box(10)

fix

3. w (Beginning of Words): Expressed by the oo-hook when w, sw, wh occur at the beginning of the word. (71,75a)

we(1) switch(23)

while(13)

4. w (Body of Words): Expressed by a dash placed underneath the vowel following the w sound. (75a)

square(14) always(4)

South-Western

1. nk: See Bends and Blends, No. 7.

Unique

1. Internal y sound is written with a small circle. (68c)

opinion(7) ə pin'yən

union(14) ūn'yən

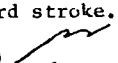
CR: WBJ Nos. 8, 9, 10, 17, 19. See also Gregg Undeclared WEJ No. 1

BENDS AND BLENDS

Gregg

Identical

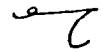
1. Ded, Dit, Det, Ted: Expressed by blending d and t into one long upward stroke. (75a)

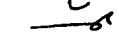
deduct(26) 

details(8) 

today(3) 

2. Men, Mem: Represented by blending m and n into one long forward stroke. (84a)

remember(8) 

minutes(13) 

CR: M No. 11

3. Ld: Represented by writing the l with an upward turn at the end of the stroke. (60a)

held(4) 

sold(8) 

Similar

4. Dem, Tem: Represented by a long, upward curve blending the angle between d or t and m. (113a)

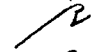
demand(18) 

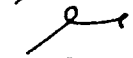
system(3) 

South-Western

Identical

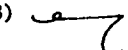
1. Dd, Dt, Td: Represented by blending d and t into one long upward stroke. (40c)

deduct(26) 

details(8) 

today(3) 

2. Mm, Mn: Represented by blending m and n into one long forward stroke. (22c)

remember(8) 

minutes(13) 

CR: M No. 11

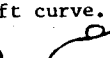
3. Ld: Represented by the l stroke with the end curved upward. (40c)

held(4) 

sold(8) 

Similar

4. Dm, Dn: Represented by combining d and m into a long, upward left curve. (66b)

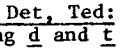
demand(18) 

evidence(8) 

Gregg

5. Den, Ten: Represented by a shorter, upward curve blending the angle between d or t and n. (109a)

evidence(8)

attend(6) 

6. Nd, Nt: Represented by an upward curve blending the angle between n and t or d. (56a)

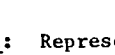
find(2)

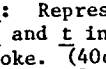
agent(7) 

7. Ngk: See Consonants No. 1

South-Western

5. Tm, Tn: Represented by combining t and m into a middle-sized, upward left curve. (50c)

system(3) 

attend(6) 

6. Nd, Nt, Nv: Represented by a medium-sized, upward curve blending n with d in a bend. (23c)

find(2)

agent(7) 

envy

CR: Undeclared WBJ No. 1

7. Nk(ngk): Represented by a long straight stroke slanted downward. (32c)

bank(7) 

banquet 

Unique

8. Def, Dif: Represented by blending d and f. (118a)

definite(14) 

different(8) 

9. Dev, Div: Represented by blending d and v. (118a)

developed(9)

individual(5)

8. Fr: Represented by bending the f stroke to the right. (30b)

free(3) 

freight(9) 

CR: Gregg WBJ No. 20

9. Gr, jr: Represented by bending the g,j stroke to the right. (45b)

group(4)

major(7)

BENDS AND BLENDS
(continued)

Gregg

South-Western

10. Md, Mt: Represented by a long, upward curve blending the angle between m and t or d. (148a)

named(27)

prompt(7)

11. Rd: Represented by writing r with an upward turn at the end. (60a)

card(3)

appeared(17)

12. Ses: Represented by joining the two forms of s. (56a)

basis(5)

census(36)

CR: Undeclared B No. 4

WORD BEGINNINGS—DISJOINED

Gregg

South-Western

Identical

1. Electr-, Electric-: Expressed by a disjoined e-l placed above the line of writing. (237a)

electronic(22)

electric wire

1. Electr-, Electric-: (Word Compound) Expressed by a disjoined e-l placed above the line of writing. (71c)

electronic(22)

electric wire

2. Over-: Expressed by a disjoined o placed above the line of writing. (118a)

overall(11)

overdue(27)

2. Over-: (Word Compound) Expressed by a disjoined o placed above the line of writing. (43c)

overall(11)

overdue(27)

3. Under-: Expressed by a disjoined oo placed above the line of writing. (130a)

understood(44)

undertaking(29)

3. Under-: (Word Compound) Expressed by a disjoined u placed above the line of writing. (56c)

understood(44)

undertaking(29)

Similar

4. Self-: Expressed by a disjoined left s placed above the line of writing. (227a)

self-explanatory(43)

self-defense

CR: WEJ No. 9; WBD No. 10

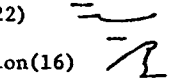
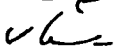
4. Self-: (Word Compound) Expressed by a disjoined s-e placed above the line of writing. (67c)

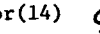
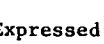
self-explanatory(43)

self-defense

CR: WEJ No. 9

WORD BEGINNINGS--DISJOINED
(continued)

Gregg	South-Western
5. Super-: Expressed by a disjoined comma s placed above the line of writing. (222a) supervisor(14)  superior(32)	5. Super-, Supr-: Expressed by a disjoined s placed above the line of writing. (75c) supervisor(14)  supreme 
6. Trans-: Expressed by a disjoined t placed above the line of writing. (211a) transit(18)  transfer(7) 	6. Tran-, Trans-: Expressed by a disjoined t placed above the line of writing. (57c) transit(18)  transfer(7) 
7. Inter-, Intr-, Enter-, Entr-: Expressed by a disjoined n placed above the line of writing. (179a) internal(22)  entrance(46)	7. Inter-, Intr-: Expressed by a disjoined n placed above the line of writing. (50c) internal(22)  introduction(16) 
8. Saint: Expressed by joining s-t to the following word. See Miscellaneous No. 2.	8. Saint; (Proper Name Element) Expressed by a disjoined s-t placed above the line of writing. (98c) St. Louis  St. Paul 

Gregg	South-Western
Unique	
9. Ah-, Aw-: Expressed by placing a dot on the line preceding the rest of the word. (142a) ahead(10)  award(9) 	
10. Circum-: Expressed by a disjoined left s placed above the line of writing. (227a) circumstances(13) circumscribing  CR: WBJ No. 4	
11. Post-: Expressed by a disjoined p placed above the line of writing. (222a) postal(29)  postmark	

WORD BEGINNINGS—JOINED

Identical

Gregg	South-Western
1. Al-: Expressed by the o stroke when a has the sound of o. (165a)	1. Al-: Expressed by the o stroke. (43c)
also(1) 	also(1)
already(3)	already(3)
CR: Undeclared WBJ No. 1	
2. Be-: (Bi-) Expressed by the b stroke. (85a)	2. Be-: Expresssed by b, as be typically has a short i sound. (25c)
because(2)	because(2) 
begin(10)	begin(10)
3. Ex-: Expressed by the e-s strokes. (147a)	3. Ex-: Expressed by the e-s strokes. (33c)
examination(8) 	examination(8) 
extremely(9)	extremely(9) 
4. Per-, Pur-: Expressed by the p-r strokes. (88a)	4. Per-, Pur-: Expressed by the p-r strokes. (50c)
perhaps(6)	perhaps(6) 
purchase(5)	purchase(5)
CR: Undeclared WBJ No. 3	
5. Sub-: Expressed by the s stroke. (197a)	5. Sub-: Expressed by the s stroke. (53c)
submitted(6)	submitted(6)
substantial(14)	substantial(14)

Gregg	South-Western
*6-7. Gregg does not have a Pre-, Pro- principle. Words with these beginnings are expressed by p-r-e and p-r-o, respectively, and are considered to be written in full.	* 6. Pre-: Expressed by the p-r-e strokes. (36c)
prefer(11) 	prefer(9)
procedure(5)	preparation(11) 
	* 7. Pro-: Expressed by the p-r-o strokes. (53c)
	procedure(5)
	process(7)
8. Ya-: Expressed by a large loop. (142a)	8. Initial Ya-: Expressed by looping the a stroke. (70b)
yard(20)	yard(20)
yarn	yarn
9. Ye-: Expressed by a small loop. (142a)	9. Initial Ye-: Expressed by looping the e stroke. (68c)
yellow(19)	yellow(19)
yield	yield
10. Yo-: Before the o sound, y is represented by the small e circle. (142a)	10. Yo-: Expressed by combining the e and o strokes. ((70b)
York	York
yolk	yolk 
CR: WBJ No. 17	

Gregg

11. Com-, Con: Expressed by k before a consonant. When followed by a vowel, they are expressed by k-m, k-n, respectively. (105a)

complete(2)

concerning(3)

BUT community(6)

connection(5)

12. De-, Di-: Expressed by the d stroke except before k or g(gay). (88,93a)

design(8)

digest(46)

BUT decline(25)

degree(15)

13. Em-, Im-: Expressed by the m stroke before a consonant. When followed by a vowel, they are written out. (192a)

employee(6)

import(33)

BUT emergency(17)

immoral

South-Western

Similar

*11. Com-, Con-: Expressed by k-m, k-n, respectively. (32c)

complete(2)

concerning(3)

community(6)

connection(5)

12. De-: Expressed by d, as de typically has the short i sound. (25c)

design(8)

decline(25)

degree(15)

13. Im-: Expressed by the m stroke. (35c)

impossible(17)

import(33)

CR: V Principle No. 6

Gregg

14-15. En-, In-, Un-: Expressed by the n stroke before a consonant. When followed by a vowel, they are written out. (134a)

engineering(8)

income(4)

unless(6)

BUT enable(12)

inadequate

unusual(15)

16. Re-: Expressed by the r stroke before downstrokes or vowels. (81,93a)

refer(8)

reason(5)

BUT relate

retake

17. Yoo-: (Yu-sound) Before an oo, y is represented by the small e circle. (142a)

young(11)

youth(16)

CR: WBJ No. 10

South-Western

14. In-: Expressed by the n stroke. (35c)

income(4)

inadequate

CR: V Principle No. 6

*15. Un-: Expressed by the u-n strokes. (39c)

unless(6)

unusual(15)

*16. Re-: Expressed by the r-e strokes. (36c)

refer(8)

reason(5)

relate

retake

17. Yu-sound: Expressed by the u stroke. (68c)

young(11)

youth(16)

Gregg

18. New: See Miscellaneous No. 2.

South-Western

18. New: (Proper Name Element) Expressed by the n stroke. (87c)

New Orleans 

New York 

Unique

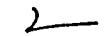
19. Des-, Dis-: (Dec-, Dys-) Expressed by the d-s strokes. (166a)

discuss(6) 

described(7) 

20. For-, Fore-, Fur-: Expressed by the f stroke. (170a)

form(2) 

foremen(36) 

furnish(7) 

CR: J Nos. 11,12; Undeclared WBJ No. 2; SW B No. 8

21. Mis-: (Mys-) Expressed by the m-s strokes. (165a)

mistake(42) 

mystery 

19. Initial Yi-: Expressed by looping the long i stroke. (68c)

yipe 

20. Ind-, Int-, Inv-: Expressed by the nd bend omitting the initial i. (23c)

indeed(14) 

into(2) 

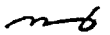
inventory(11) 

CR: Gregg Undeclared B No. 2

Gregg

22. Ul-: Expressed by the oo stroke before a forward or upward stroke. (232a)

ultimate(35) 

culminate 

CR: Undeclared J No. 4

South-Western

WORD ENDINGS--DISJOINED

Identical

Gregg	South-Western
1. -cal, -cle: Expressed by a disjoined k stroke. (175a) practical(13) article(9) obstacle CR: Undeclared WED No. 1	1. -acle, -ical, -icle: Expressed by a disjoined k stroke. (43c) practical(13) article(9) obstacle
2. -hood: Expressed by a disjoined d stroke. (232a) boyhood neighborhood(37) CR: WED No. 6	2. -hood: Expressed by a disjoined d stroke. (79c) boyhood neighborhood(37) CR: WED No. 6
3. -ing: Expressed by a dot placed at the end of the word. (22a) doing(7) keeping(13)	3. -ing: Expressed by a dot near the end of the outline. (22c) doing(7) keeping(13)
4. -ship: Expressed by a disjoined sh stroke. (197a) membership(7) relationship(15)	4. -ship: Expressed by a disjoined sh stroke. (76c) membership(7) relationship(15)
5. -ulate,-ulation: Expressed by a disjoined oo and oo-tion, respectively. (222a) accumulate(35) regulation(29)	5. -ulate; Expressed by a disjoined u stroke. (67c) accumulate(35) regulation(29)
6. -ward: Expressed by a disjoined d stroke. (232a) forward(3) upward(29) CR: WED No. 2	6. -ward: Expressed by a disjoined d stroke. (79c) forward(3) upward(29) CR: WED No. 2

Similar

Gregg	South-Western
7. -gram: Expressed by a disjoined g stroke. (237a) program(1) telegram	7. -gram: See Word Endings--Joined No. 5.
8. -ingly: Expressed by a small, disjoined circle in the ing position. (192a) seemingly(49) increasingly(22)	8. -ingly: Expressed by a disjoined ng stroke and the ly loop. (98b) seemingly(49) increasingly(22)
9. -ings: Expressed by a disjoined left s stroke. (180a) meetings(11) savings(7)	9. -ings: Expressed by a disjoined ng-z. (53c) meetings(11) savings(7)

WORD ENDINGS--DISJOINED
(continued)

Gregg	South-Western
10. -ology: See Word Endings--Joined No. 6	10. -alogy, -ology: Expressed by a disjoined o stroke. (76c) apology(30) genealogy
11. -titude, -titute: See Word Endings--Joined No. 13	11. -titude, -titute, -tude: Expressed by a disjoined t-u. (79c) attitude(30) institute(15) magnitude
12. -ual: See Word Endings--Joined No. 14	12. -tual: Expressed by a disjoined l stroke. (61c) actual(8) mutual(15)
Unique	
13. -ification: Expressed by a disjoined f stroke. (211a) classification(13) notification(22)	13. -bility: Expressed by a disjoined b stroke. (75c) possibility(10) liability(12)
14. -ingham: A geographical termination expressed by a disjoined m stroke. (242a) Buckingham Cunningham	14. -casion, -cation: Expressed a disjoined k-n. (60c) occasion(18) location(6)
15. -ington: A geographical termination expressed by a disjoined ten blend. (242a) Lexington Washington	15. -cher, -ture: Expressed by a disjoined ch stroke. (44c) future(2) teachers(10) CR: Gregg WEJ No. 25
16. -lity, -lty: (-lety) Expressed by a disjoined l stroke. (201a) facility(18) faculty(21) CR: SW WED No. 18	16. -ed: Expressed by a disjoined diagonal stroke. (19c) added(8) asked(5)
17. -rity: (-rety) Expressed by a disjoined r stroke. (201a) security(11) surety CR: SW WED No. 18	17. -er, -or with Speedform Related Words and Contracted Forms: Expressed by a disjoined r stroke. (37c) Speedform: greater(10) BUT favor(16)
	18. -ety, -ity: Expressed by a disjoined t-e. (60c) society(11) security facility(18) BUT faculty(21) CR: Gregg WED Nos. 16, 17; Gregg Undeclared WEJ No. 2

WORD ENDINGS--DISJOINED
(continued)

Gregg

South-Western

19. -ive, -sive, -tive: Expressed by a disjoined v stroke. (60c)

comprehensive(15)

executive(5)

CR: J No. 15

20. -ous, -us: Expressed by a disjoined s stroke. (58c)

various(6)

campus(36)

CR: J No. 15

21. -sation, -zation: Expressed by a disjoined s-n, z-n, respectively. (72c)

compensation(15)

authorization(19)

22. -scribe: Expressed by a disjoined s-b. (57a)

describe(17)

transcribe

23. -script: Expressed by a disjoined s-p. (57c)

description(13)

transcript(39)

WORD ENDINGS--JOINED

Gregg

South-Western

Identical

1. -ble: Expressed by the b stroke. (80a)

possible(2)

available(2)

CR: Undeclared V No. 12

1. -ble: Expressed by the b stroke. (40c)

possible(2)

available(2)

2. -burg(h): (-berg) A geographical termination expressed by the b stroke. (242a)

Harrisburg

Pittsburgh

2. -burg(h), -berg: A proper name element expressed by the b stroke. (98c)

Harrisburg

Pittsburgh

3. -ful: Expressed by the f stroke. (148a)

helpful(5)

useful(12)

3. -ful: Expressed by the f stroke. (49c)

helpful(5)

useful(12)

4. -ville: A geographical termination expressed by the v stroke. (242a)

Nashville

Jacksonville

4. -ville: A proper name element expressed by the v stroke. (87a)

Nashville

Jacksonville

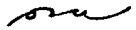
Similar

5. -gram: See Word Endings--Disjoined No. 7.

5. -gram: Expressed by the gr-m strokes. (68a)

program(1)

WORD ENDINGS--JOINED
(continued)

Gregg	South-Western
6. -ology: (-alogy) An abbreviated word family expressed by the o-l strokes. (207a) apology(39)  technology  NOTE: genealogy 	6. -alogy, -ology: See Word Endings--Disjoined No. 10
7. -ly: Expressed by the e circle. (48a) only(1) daily(9)	7. -ly: Expressed by looping the e circle. (26c) only(1) daily(9) CR: J No. 16; G WEJ No. 17
8. -ment: Expressed by the m stroke. (100a) agreement(5)  payment(2) 	8. -ment: Expressed by the mn blend. (22c)  agreement(5)  payment(2)
9. -self: Expressed by the s stroke. (201a) himself(41)  yourself(7) CR: WBD No. 4	9. -self: A word compound expressed by a joined s-e. (67c) himself(41) yourself(7) CR: WBD No. 4

Gregg	South-Western
10. -selves: Expressed by the ses blend. (202a) ourselves(13)  themselves(19)	10. -selves: Expressed by adding s to the self (s-e) ending. (67c) ourselves(13)  themselves(19)
11. -ther: Expressed by the th stroke. (105a) other(6) rather(6)	11. -ther, -thor: Expressed by the th stroke. (36c) other(6) author(30) 
12. -tion: (-sion, -cian) Expressed by the sh stroke. (52a) action(4) session(16) physician	*12. -sion, -tion: Expressed by combining sh-n, as sounded. (19c) action(4) session(16) physician 
13. -titude, -titute: An abbreviated word family expressed by t-e-t. (206a) attitude(30)  institute(15) 	13. -titude, -titute, -tude: See Word Endings--Disjoined No. 11
14. -ual: (-ial, -eal, -iel, -ule) Expressed by l except after a downstroke. (160,184a) actual(8) schedule(4) BUT casual(45)	14. -tual: See Word Endings--Disjoined No. 12

WORD ENDINGS--JOINED
(continued)

Gregg

South-Western

Unique

15. -cient, -ciency: (-tient) Expressed by sh-t and sh-s-e, respectively. (52a)

efficient(19)

efficiency(30)

16. -ern, -erm: The r is omitted in the combinations -tern, -term, (-turn, -torn); -dern, -derm; -thern, -therm. (175a)

eastern(17)

northern(29)

modern(12)

17. -ily: (-ally) Expressed by a narrow loop. (165a)

easily(20)

family(7)

CR: SW WEJ No. 7

18. -ort: R is omitted in the syllable sound -ort (-art, -ourt). (175a)

report(2)

court(15)

15. -field: A proper name element expressed by the f stroke. (90c)

Mansfield

Springfield

16. -graph: Expressed by the gr bend. (68c)

paragraph(16)

telegraph(50)

17. -ject: Expressed by the j-t strokes. (54c)

project(5)

subject(4)

18. -port: A proper name element expressed by the p-t strokes.(90c)

Davenport

Shreveport

Gregg

South-Western

19. -quent: (-quence) An abbreviated word family expressed by the k stroke. (206a)

subsequent(29)

frequency(33)

20. -quire: An abbreviated word family expressed by k-i. (206a)

require(4)

acquire(44)

21. -sume, -sumption: Expressed by s-m and s-m-tion, respectively. (227a)

assume(11)

assumption(44)

22. -tain: Expressed by the ten blend. (110a)

obtain(5)

certain(4)

23. -tial: (-cial, -shal, -sial) Expressed by the sh stroke. (52a)

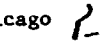
initial(10)

social(8)

WORD ENDINGS—JOINED
(continued)

Gregg	South-Western
24. -tribute: An abbreviated word family expressed by t-r-e-b. (206a) contribute(19) distribution(5)	
25. -ure: (-ior, -iar, -eur, -our) Expressed by r unless preceded by a downstroke. (160,184a) future(2) exterior(41) BUT brochure(7) sure(2) CR: SW WED No. 15	

MISCELLANEOUS SHORTHAND PRINCIPLES

Gregg	South-Western
Identical	
None	
Similar	
1. Business Abbreviations: Special abbreviations are used for common expressions, such as: (44,113a) Dear Mr. Dear Miss Sincerely yours Yours truly	1. Correspondence Forms: Special shortcuts are used with common expressions, such as: (33,51c) Dear Mr.  Dear Miss  Sincerely yours  Yours truly 
2. Cities: The names of large cities may be abbreviated. (130,348a) Chicago New York Saint Louis CR: SW WBJ No. 8; SW WBJ No. 18	2. Cities: Cities such as Buffalo are written in full; others such as Chicago are commonly abbreviated. (87c) Chicago  New York  CR: J No. 20 & Undeclared A No. 2
*3. Compound Words: Most compounds are formed by simply combining the outlines for the separate words. (237a) cannot(3) outline(13) CR: Joining No. 14	*3. Compound Words: Compound words often combine two speedforms, a speedform with another word, or two other words by simply combining the outlines for the single words. (27c) cannot(3)  outline(13) 

MISCELLANEOUS SHORTHAND PRINCIPLES
(continued)

Gregg

4. Countries: Names of countries may be abbreviated. (349a)

United States

England

5. Days: Outlines are based on the beginning portion of the word. (114a)

Sunday

Friday

6. Months: Months are usually written according to longhand abbreviation. (114a)

January April

July November

7. States: State abbreviations usually follow longhand abbreviations. (130,347a)

Illinois

Pennsylvania

Observation: State abbreviations may also be written with the official two-letter postal code abbreviations:

Illinois

Pennsylvania

South-Western

4. Countries: See Miscellaneous Shorthand Principle No. 9.

5. Days: Outlines are based upon the initial sounds in each word. (51c)

Sunday

Friday

6. Months: Months are written according to widely used abbreviations. (27c)

January April

July November

7. States: States are written with the official two-letter postal code abbreviations. (87c)

Illinois

Pennsylvania

Observation: States may also be written in shorthand:

Illinois

Pennsylvania

Gregg

8. Quantities and Amounts: Special abbreviations are used with numerals, such as: (49,232a)

six o'clock 600

six percent 6,000

six feet 600,000

$600 6,000,000

9. Observation on Miscellaneous Abbreviations: Shortcuts are used with common abbreviations, such as:

etc. (4)

mph

T.V.A.

10. Observation on Ordinal Numbers: Words first, second, third, and fourth are written out. Other numbers may express the ordinal endings by raising the shorthand character above the figure.

first second

third fourth

BUT eighth fifteenth

CR: A Rules No. 6

South-Western

8. Quantities: Specific quantities are written in figures with special abbreviations, such as: (80c)

six o'clock 600

six percent 6,000

six cents 600,000

$600 6,000,000

9. Miscellaneous Terms: Shortcuts are used with common abbreviations, such as: (97c)

a.m. etc.

U.S.A. OK

English American

10. Ordinal Numbers: Words first, second, etc. are represented by figures with the ordinal endings st, d, and th written in shorthand above the line. (43c)

first second

third fourth

CR: A Rules No. 6

MISCELLANEOUS SHORTHAND PRINCIPLES (continued)

Gregg

11. Observation on compound man-men: In compounds, man is written m-a-n to distinguish it from men, which is written with the men blend.

doorman

doormen

CR: B No. 2

South-Western

11. Compound man-men: In compounds, man is written m-a-n to distinguish it from men, which is written with the mn blend. (87c)

doorman

doormen

CR: B No. 2

Unique

12. Intersection: Writing of one shorthand character through another when a constant repetition of word combinations occurs. (238a)

a.m. C.O.D.

vice versa

WRITING AND JOINING PRINCIPLES

Gregg

South-Western

Identical

1. Numbers: In writing numbers, the n representing hundred and the th representing thousand is written below the figure while the m representing million is written beside the figure. (49,232a)

500 5,000

5,000,000

1. Quantities: The n for hundreds is written under the figure while the m for million is written to the side of the figure. (56b)

500 5,000

5,000,000

Similar

2. Jog: A jog is used to join two straight strokes in the same direction. (70,100a)

assignment(9)

audited

2. Jog: A jog is used to join two straight strokes. (22,148c)

assignment(9)

Observation: A jog is also used to join a straight stroke to an upward curve:

university(6)

diminish

3. Oo after n,m: The oo-hook is placed on its side after n and m. (30,39a)

noon(24) move(12)

BUT pool(29)

Observation: oo is placed on its side after a blend ending with n or m and after other horizontal strokes.

lose(27) continue(3)

3. U after horizontal stroke: u is turned under following a horizontal stroke. (5c)

lose(27) noon(24)

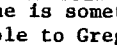
BUT pool(29)

Observation: u is turned under after a bend ending with n or m.

continue(3)

WRITING AND JOINING PRINCIPLES
(continued)

Gregg	South-Western
4. Word Placement: The base of the first consonant of a word is placed on the line of writing except when an s stroke comes before a downstroke. The downstroke is then placed on the line of writing. (65a) desire(5)  BUT spring(12)  us(1)	4. Word Placement: The base of the first stroke rests on or near the line of writing except when a beginning vowel precedes a downstroke consonant. The base of the consonant is then placed on or near the line of writing. (3c) desire(5)  spring(12)  BUT us(1) ?
5. Observation on Circle i: This guideline could be applied to some of the Gregg outlines. desire(5)  BUT might(3) CR: Writing Accuracy No. 7	5. Circle i is often broken with a consonant. (3c) desire(5) might(3) CR: Writing Accuracy No. 7
6. Observation on S: This guideline is sometimes applicable to Gregg. slow(38)  CR: J Nos. 15, 16	6. S: The s is distinguished in all joinings. (18c) answer(4) solution(20)

Gregg	South-Western
Unique	
7. Circles with Angles and Curves: Circles are written outside angles and inside curves. (38a) same(2)  leave(10) sale(9)  able(3)	7. All circle vowels are written and joined in the dominant, longhand direction. (preface c) may(1) mass(42) made(1)  mail(3)
8. Circles with Clockwise and Straight Strokes: Circles are written clockwise on a straight line and between two straight strokes in the same direction. (38a) age(6) may(1) main(10) did(3)	8. A beginning vowel is joined on the left of a straight stroke. (32c) accident(13) BUT along(5) CR: Undeclared J Nos. 6, 7, 8, 9
9. Circles in Opposite Directions: Between two curves written in opposite directions, the circle is written on the back of the first curve. (38a) care(5) like(2)	*9. A speedform retains its original form in a joined compound. (76c) ever(8) IN however CR: Gregg J No. 14
10. For-,Fore- Followed by Vowel: When word beginnings for-, fore- are followed by a vowel, the f is disjoined before the following character. (170a) forever forewarn CR: WBJ No. 20	10. The outline for letters is written to distinguish it from the outline for lease. (24c) letters(9) lease(13)

WRITING AND JOINING PRINCIPLES
(continued)

Gregg

11. For- Word Beginning Joined: The f representing word beginnings for-, fore-, fur- is joined with an angle to r and l to indicate that it is a word beginning. (170a)

forget(22) 

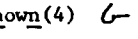
forerunner 

furlong 

CR: WBJ No. 20; Writing Accuracy No. 18

12. O before n,m: The o-hook is placed on its side before n and m, unless a downstroke precedes. (21a) (Observation: and blends thereof)

loan(7) 

BUT shown(4) 

CR: J No. 3

13. Oo-s: At the beginning of a word and after k, g (gay), or downstroke, oo-s is written without an angle. (93a)

customer(5)  us(1)

gust  just(2)

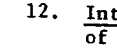
South-Western

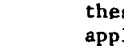
11. Tm, tn takes priority over the the nt bend. (xd)

content(33)

CR: Undeclared B No. 1

12. Inter-, int-, in-: A priority of application exists when these principles could be applied. (viiid)

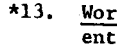
a. interview 

b. intact 

c. insert(21) 

CR: Undeclared WBJ Nos. 1, 2

*13. Word beginnings are consistently written, even with one or two prefixes added. (viid)

committed(32) 

uncommitted 

*14. Word endings are consistently written, even with one or two suffixes added. (ixd)

station(10) 

stationed 

Gregg

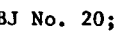
14. Compound Words--Modified: In some compound words the outline is modified to obtain a better joining. (237a)

however(1) within(3)

CR: SW J No. 9, M No. 3

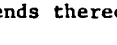
15. Comma s: Comma s is used in the following instances: (64a)

a. At the beginning and ending of words before and after f, v, k, g.

safes  saves 

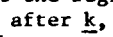
seeks sags

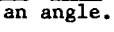
b. Before t, d, n, m, o and before and after sh, ch, and j. (and blends thereof)

start(10)  since(2)

sessions(25) sieges

c. Used in words consisting of s and a circle vowel and th and a circle vowel.

see(2)  say(7) 

these(1) 

CR: J No. 6; Undeclared J Nos. 7-14

South-Western

15. -ed, -ous, -us word endings are not applied to single syllable words. (xd) (Observation: also -ive, -ity endings)

bed(32) fuss

live(16) city

CR: WED Nos. 16, 19, 20

16. -ly word ending: write only the e when the l sound is heard at the end of a root word.

peaceful

BUT peacefully 

CR: WEJ No. 7

17. -ject sounds: May drop the t sound in certain derivatives. (ixd)

reject

BUT rejection

CR: Gregg Undeclared V No. 14; Gregg WEJ No. 12; SW WEJ No. 12

WRITING AND JOINING PRINCIPLES
(continued)

Gregg

16. Left s: Left s is used in the following instances: (64a)

a. At the beginning and ending of words before and after p, b, r, l.

space(5) sables

series(7) sales(3)

b. After t, d, n, m, o. (and blends thereof)

its(2) means(8)

loss(7)

CR: J No. 6; Undeclared J Nos. 7-14

17. Th (under): Under th is used when th is joined to o, r, or l; otherwise, over th is used. (39a)

then(2) thick(38)

BUT both(3)

three(3) health(9)

*18. Past Tense: Past tense is formed by adding the stroke for the sound that is heard. (94a) (t, d, or blend)

saved(29) resumed

backed

CR: SW WEJ No. 16

South-Western

18. Two disjoined word endings are combined if they retain their identity when written together (57c,ixd)

describe(17)

described(7)

BUT biologic

biological(39)

19. Two-part outlines are written close together. (xiid)

Ft. Smith

CR: Undeclared A No. 2

Words of two or more parts are written close together. (75c)

McRay

In hyphenated words, the hyphen may be omitted and the parts written close together. (75c)

full-time(19)

X-ray(44)

AUXILIARY RULES

Identical

Gregg	South-Western
1. Initials with Surname: Initials are written in longhand. (46a example) J. C. Adams	1. Initials with Surname: Initials are written in longhand. (41c) J. C. Adams
2. Money--Exact Amounts: Exact amounts of money are expressed by raising the figures for the cents without expressing the dollar symbol. (49a) $145.15	2. Money--Exact Amounts: Exact amounts of money are expressed by raising the figures for the cents without expressing the dollar symbol. (80c) $145.15
3. Possessive Form: Possessive form is recognized through content. (20a example) associate's store's	3. Possessive Form: Possessive form is recognized through content. (4b) associate's store's

Similar

Gregg	South-Western
4. Capitalization: Capitalization is indicated by two upward dashes placed underneath the word to be capitalized. (19a) American(6) Taylor	4. Capitalization: Capitalization is indicated by a short, forward straight line below the last stroke of the outline. (2c) American(6) Taylor

AUXILIARY RULES
(continued)

Gregg

5. Contractions: (Observation: The apostrophe is deleted when a appropriate theory point can be used. The apostrophe is placed above and near the appropriate part of the outline when necessary to distinguish between a contraction and a phrase.) (238a example)

don't(5)

couldn't(26)

BUT it's(7)

we've(2)

6. Numbers: (Observation: Numbers above three are written as figures. One two, and three are written in Arabic numerals when used with abbreviations, addresses, and dates.)

Form 717

ten shares

April 2

CR: M No. 10

South-Western

5. Contractions: An apostrophe is placed above and near the appropriate part of the outline. (50c)

don't(5)

couldn't(26)

it's(7)

we've(2)

6. Numbers: Numbers above two are written as figures. (17c) (Observation: One and two are written in Arabic numerals when used with abbreviations, addresses, and dates.)

Form 717

ten shares

April 2

CR: M No. 10

Gregg

7. Punctuation: Special symbols are provided, such as: (19a)

period ∖ question mark ✗

dash ═ paragraph >

hyphen = parentheses {}

8. Punctuation--Internal: The comma is circled in internal punctuation. (26,162a examples)

comma ⓘ

BUT semicolon ;

South-Western

7. Punctuation: Special symbols are provided, such as: (2,37c)

period ∖ question mark ∨

dash ⩛ paragraph >

hyphen ∧ parentheses ( )

Note: The punctuation symbols break the line of writing.

8. Punctuation--Internal: Internal punctuation, such as a comma and semicolon, is circled in sentences. (3c)

comma ⓘ semicolon ⓘ

Unique

9. Dates: In a date, the month is capitalized by placing the figure(s) below the outline. (17c)

May 10

10. Underline: (Observation: A wavy line is drawn below words to be underlined.) (41c example)

War and Peace

CR: Undeclared A No. 1

WRITING ACCURACY AND PRECISION*

Identical

1. D, t, det: T is a short, upward straight line. D is a longer upward straight line. D and t are joined together to form ded, det, ted. (19,75a)

to(1) does(3) today(3)

1. D, t, dt: D is almost twice as long as t; and dd,dt,td is noticeably longer than d. (226c)

to(1) does(3) today(3)

2. H dot: The h dot is placed above the vowel. It is written first if it is pronounced first in the word, such as white (hw). (22,75a)

hear(5) hold(10) white(9)

2. H dot: The h dot is placed above and close to the succeeding part of the outline. It is written first if it is the beginning sound. The h dot is always written above another stroke. (9c;33b)

hear(5) hold(10) white(9)

3. N, m, men: N is a very short forward straight line while m is a long forward straight line. N and m are joined into one long forward line to form men. (19,84a)

know(1) me(1) memo(11)

3. N, m, mn: M is about twice as long as n. The mm,mn symbol is noticeably longer than m. (232c)

know(1) me(1) memo(11)

*This grouping was not tallied in decision points.

Gregg

4. Ng, nk: (Observation: This guideline could also be applied to Gregg.)

long(5) blank(16)

5. P,b: When p or b is followed by r or l, they are written with one sweep of the pen. (26,153a)

price(3) labor(10)

6. Disjoined Word Beginnings: Disjoined word beginnings are placed above the line of writing, close to the remainder of the word. (179a)

interior(31) transmission(44)

7. Circle i:

a. The broken circle i conforms to the rules for joining circles, except the end of the stroke is turned inside the circle. (215a)

lie(42) my(2)

South-Western

4. Ng, nk: Nk is about twice as long as ng. Avoid letting the ng and nk symbols slant so much they resemble the symbols for n and m. (247c)

long(5) blank(16)

5. P,b: (Observation: This guideline could also be applied to South-Western.)

price(3) labor(10)

6. Disjoined Word Beginnings: (Observation: This guideline could also be applied to South-Western.)

interior(31) transmission(44)

7. Circle i:

a. (Observation: This guideline could also be applied to South-Western:

lie(42) my(2)

Gregg

7. Circle i: (continued)

   b. Before the end of circle i is turned inside the circle, the circle touches the stroke to which the i is joined. (215a)

   fine(6)  line(2) 

   CR: J No. 5

8. O-hook and oo-hook:

   a. The beginning and ending of the hooks are on the same level of writing. The hooks are kept narrow and deep, avoiding points in the curved portion of the hooks. (184,185a)

   of(1)  you(1) 

   b. Between two parallel straight lines, o-hook retraces the end of the preceding stroke, oo-hook retraces the beginning of the following stroke. (184,185a)

   known(1) noon(24)

South-Western

7. Circle i: (continued)

   b. (Observation: This guideline could also be applied to South-Western.)

   fine(6)  line(2) 

   CR: J No. 5

8. O, u:

   a. The o and u symbols are the same size and shape, but they are written in opposite directions and are open at opposite ends. Both hooks are narrow and deep. (218c)

   of(1)  you(1) 

   b. (Observation: When the u stroke is turned under following a horizontal stroke, it retraces the beginning of the following stroke.)

   noon(24)

Gregg

9. S,p,b: Left s, p, b curves are deep at the end of the curve. P and b resemble the left s in shape except p is approximately half the height of the notebook line space and b is almost full height of the line space. (25,152a)

   hours(6)  hope(2)

   business(1) 

   CR: Writing Accuracy No. 5

South-Western

9. S,p,b: P is the size of f. (31b) B is a large downward stroke, curving to the left. (28b) (Observation: This guideline could also be applied to South-Western.)

   hours(6)  hope(2)

   business(1) 

   CR: Writing Accuracy Nos. 5, 17

Similar

10. Ow, oi: In writing ow and oi, the circles are written outside the hooks. (215a)

    how(2)  join(14) 

11. Rd, ld: Only the end of r and l should be lifted upward in the rd, ld blends. If the ends are lifted too soon, the strokes will resemble the nd, md combinations. (185a)

    cold(19) 

    neared 

12. Jog: (Observation: This guideline could also be applied to Gregg.)

    ordered(10)

    alignment(44)

South-Western

10. Oi: (Observation: This guideline could also be applied to South-Western.)

    join(14) 

11. Ld: (Observation: This guideline could also be applied to South-Western.)

    cold(19) 

12. Jog: Avoid making the jog so wide it resembles the o. (148c)

    alignment(44)

    branch(9)

WRITING ACCURACY AND PRECISION
(continued)

Gregg

13. Joining of Hooks and Circle Vowels: When a hook and a circle vowel come together, they are written in the order pronounced. (197a)

poet radio(11)

14. Ya, ye: (Observation: This guideline could also be applied to Gregg.)

yes(18)  yards(35)

South-Western

13. Eo, ea: The eo in radio and ea in area are written in natural sequence. (67c)

radio(11)  area(2) 

ideas(9) 

14. Ya, ye, yi: The sounds of ya, ye, yi are written by combining the y stroke and the vowel stroke into a loop. (70b)

yes(18)  yards(35) 

yipe 

Unique

15. Circles a and e: Circles a and e may be written in either direction. (17a)

made(1) man(7)

car(5) keep(3)

16. Th, ten, tem: The beginning of these curves are deep. Th is a small stroke; tem is large; ten is about half the size of tem. (247a)

teeth detain

medium(42)

15. Circle Vowels: All circle vowels (a,e,i,y) always join (touch or cross) all other strokes in a consistent, dominant direction. (preface c)

man(7)  maid(48) 

mass(42)  mail(3) 

16. Tm,tn; dm,dn: Since tm,tn begins with a bend of the short t, it is a shorter stroke than the dm,dn, which is a bend of the longer d stroke. (50c)

temporary(17) 

dinner(16) 

Gregg

17. Def Blend: The def blend is almost the full height of the notebook line, narrow, with the stroke beginning and ending on the same writing level. (247a)

defect(46) 

differ 

18. F,v: When f is followed by r or l, the angle is rounded for fluency. (22a) (Observation: v also)

free(3)  value(4) 

CR: J No. 11

19. R, l, k, g curves:

a. Each curve begins and ends on the same level of writing. (123a)

b. The beginnings of r and l are deep; the endings of k and g are deep. (123a)

our(1)  can(1) 

lay(37)  go(3) 

c. L and g are considerably longer than r and k. L is approximately three times as long as r. (21, 123a)

(Observation: The above guidelines could also be applied to South-Western's r and l curves.)

South-Western

17. Circles Joined to b,p,s: When circles are joined to b, p, and s, close the circle completely before continuing the next stroke in the outline. (184c)

better(3)

sale(9)

CR: Writing Accuracy Nos. 5, 9

18. Ot, st Joinings: The ot joining is made with a narrow, deep hook while the st joining is made with a sharp angle between the s and the t. (212c)

lot(14) 

BUT state(2) 

19. Sh,zh; fr; gr,jr: Fr is about twice as long as sh,zh. The gr,jr symbol is longer than the fr symbol. (241c)

she(19)  free(3)

grow(21)

Gregg | South-Western

19. R, l, k, g curves: (continued)

d. Curves of equal length (kr, rk, gl) are somewhat flat when joined. (124a)

mark(17)

glow 

e. Joined curves are shorter than the combined length of the strokes when written separately. (31, 124a)

glass(17) 

BUT go(3) 

f. Curves of unequal length (gr, kl) show a positive distinction when joined. (31a)

groups(10) 

claim(5)

20. S,f,v: Comma s, f, v curves are deep at the beginning of the curve. S resembles a longhand comma; f,v resemble this shape except that f is approximately half the height of the notebook line space, and v is almost full height of the line space. (17,152a)

say(7) 

fact(4) 

vision(7)

Gregg | South-Western

21. Sh, ch, j: Sh, ch, j are straight downward strokes. Sh is very short; ch is approximately half the height of the notebook line space, and j is almost full height of the line space. (29a)

shall(4) 

check(2)

age(6)

22. W dash: W dash is inserted underneath the vowel following the w sound after the rest of the outline has been written. (75a)

quick(18)

twice(20)

DESCRIPTION OF GREGG DJ AND SW CENTURY 21 SHORTHAND SYSTEMS

PART II. TEXTUALLY UNDECLARED PRINCIPLES

BLENDS AND BENDS

Gregg

Similar

1. Blends ten/den and tem/dem take precedence over ent/end and emt/emd. (8g)

understanding(7) 

students(6) 

Unique

2. Blends are used in derivatives if the blend affects only the first or last letter of the primitive. (5g)

prepare(11)  prepared(4) 

trap  entrap 

deed  BUT indeed(14) 

CR: Undeclared J No. 2

3. When a choice of blends occurs, straight-line blends take precedence over curved-line blends. (8g)

recommend(7) 

comments(6)

South-Western

Similar

1. (Observation: The dn bend takes precedence over the nt bend in the -dent ending unless the ind- principle occurs.)

students(6)

confident(20)

dent BUT indent

CR: J No. 12; Undeclared WBJ No. 2

Gregg

4. (Observed exception to ses blend: The plural of brief forms ending in s are formed by adding another s of the same motion unless an i precedes the s. (80a example)

businesses 

corresponds

BUT recognizes

advertises

CR: B No. 12

South-Western

CONSONANT PRINCIPLES

1. (Observation: Consonant x is represented by the k-s strokes.)

tax(3)

box(10)

2. (Observation: Consonant q is represented by the k-v,w strokes.)

quite(6) 

quick(18) 

VOWEL PRINCIPLES

Gregg

1. The oo-hook is omitted between r and l and a straight downstroke. (11g)

   crucial 

   pollution 

   CR: V No. 8

2. Dipthong u is omitted before r and l in the body of an outline. (11g)

   accurate(17) 

   popular(19) 

   CR: V No. 7

3. (Observed exception to omission of short u: Short u is written in the body of a word if preceded by an n.

   number(1)

   noon(24) 

   CR: V No. 8

4. The circle vowel is omitted from the combinations: k-r, g-r, k-l, g-l. (10g)

   careers(8) 

   legal(15) 

South-Western

1. (Observation: A vowel having a short i sound may be written in the outline as a transcription aid.) Note: Phonetics of SW system based on third edition of Thorndike-Barnhart dictionary. The fourth edition phonetics were changed and would have necessitated different outlines for some words.

   dear(1) 

   third edition: dēr

   fourth edition: dir

   here(2)

   third edition: hēr

   fourth edition: hir

   CR: V No. 5

Gregg

4. (continued)

   (Observation: The vowels are written, however, when the combinations are reversed: r-k, r-g, l-k, l-g.)

   practice(8) 

   looking(8) 

   CR: Undeclared J No. 2
   Undeclared V No. 16

5. The circle vowel is omitted from the combinations: p-n, p-t, p-d, b-n, b-t, b-d. (10g)

   expense(7) 

   benefits(5) 

   hospital(8) 

6. The circle vowel is omitted from p-k. (10g)

   picture(9) 

   expect(6) 

   (Observation: The circle vowel is omitted also in the f-k, s-k (ic) combinations.)

   traffic(10) 

   specific(6)

   basic(8) 

   CR: Undeclared V No. 14;
   Undeclared J No. 14

VOWEL PRINCIPLES
(continued)

Gregg | South-Western

7. When -er, -ar, -or follow long i, left s, or a straight downstroke, the vowel is written. (13g)

prior(5)

sincerely(1) 

manager(3) 

CR: V No. 3; WEJ No. 25

8. If the ending is stressed, the vowel is written in the endings -er, -ar, -or. (12g)

transfer(7) 

BUT error(11) 

9. If the ending is stressed, the vowel is written in the endings -el, -al, -ial, -eal. (12g)

personnel(4) 

BUT level(9) 

10. If the ending is stressed, the vowel is written in the endings -en, -an, -on, -in. (12g)

beginning(9) 

BUT even(4) 

Gregg | South-Western

11. The vowel is written only when the endings -ant, -ance, -ent, -ence follow i, n, r, l. (13g)

insurance(2) 

current(3) 

BUT constant(13)

12. Word endings -ble and -cal, -cle also represent the preceding short vowel. (9g)

possible(2)

medical(4)

articles(8) 

(Observation: -lity also represents the preceding short vowel.)

facilities(18)

quality(5)

CR: WED Nos. 1, 16; WEJ No. 1

13. The vowel is always omitted in the word endings -city, -vity. (11g)

university(6)

activities(6) 

VOWEL PRINCIPLES
(continued)

Gregg

South-Western

14. The vowel is always omitted in the word endings -fect, -ject. (11g)

effect(6) 

project(5) 

CR: Undeclared V No. 6; Undeclared J No. 14; SW J No. 18

15. The vowel is always omitted in the word ending -sive. (12g)

expensive(30) 

massive 

16. The vowel is always omitted in the word endings -tract, -trict, -truct. (11g)

district(7) 

instructions(5) 

CR: Undeclared V. No. 4

17. The vowel may be omitted in words having three shorthand characters excluding the short vowel, as enough of the outline is written to assure accurate transcription. (7g)

double(17)  BUT trouble(20)

car(5)  BUT cart

Gregg

South-Western

18. The vowel is omitted in the word endings -vent, -vention. (12g)

event(7)

convention(14)

WORD BEGINNINGS--DISJOINED

None

WORD BEGINNINGS--JOINED

1. Al-: Al- is written out when joined to a vowel symbol. (8g)

always(4)

CR: WBJ No. 1

1. (Observation: Un- takes precedence over the nd, nt, nv bend.)

until(3)

undue

2. For-: For- is written out when the o has the short sound. (For- is expressed by f when the o has the long sound.) (8g)

forget(22)

BUT forum

CR: WBJ No. 20

2. (Observation: In addition to the int- word beginning, ind-, inv- usually take precedence over the word beginning in-.)

indicate(5) 

invoice(5) 

(Note: Int- takes precedence over in- unless followed by the tm, tn bend.)

intemperate 

intend(23)

CR: J No. 13; Undeclared B No. 1

WORD BEGINNINGS--JOINED
(continued)

Gregg

3. Per-, Pur-: When the r is pronounced with the succeeding syllable and the vowel has a neutral sound, per-, pur- is written out. (9g)

period(3)

purify

CR: WBJ No. 4

South-Western

WORD ENDINGS--DISJOINED

Gregg

1. (Observation: -cal, -cle: Two syllable words ending in -cal, -cle have k-l joined.)

local(3)

vocal

CR: WED No. 1; Undeclared V No. 12

1. (Observation: -ed: The ending -ed takes precedence over other principles and stroke sounds.)

used(2)

completed(4)

CR: WED No. 16

WORD ENDINGS--JOINED

Gregg

1. -ion: Expressed by oo-n after n, by n alone in other cases. (8g)

reunion

BUT champion

CR: SW C No. 1

South-Western

Gregg

2. -iety: An abbreviated word family expressed by i. (96f, 218e)

society(11)

variety(21)

3. -itis: An abbreviated word family expressed by the long i stroke.

appendicitis

neuritis

4. -ntic: An abbreviated word family expressed by the nt blend.

authentic

frantic

South-Western

MISCELLANEOUS SHORTHAND PRINCIPLES

None

WRITING AND JOINING PRINCIPLES

Identical

1. Principles are applied even when doing so combines the syllables. (5g)

tomorrow(32)

necessary(2)

division(3)

1. (Observation: Symbols and principles are applied even when doing so combines the syllables.)

tomorrow(32)

today(3)

WRITING AND JOINING PRINCIPLES
(continued)

Gregg

2. (Observation: When circles other than basic vowel sounds join, the second circle is usually placed outside the line.) (48g example)

daily(9)  gaily 

freely 

EXCEPTION highly(17) 

3. (Observation: In addition to n and m, the oo-hook is turned under when it follows r, l, or a n, m blend.

look(3) 

truly(1) 

CR: J No. 3

Similar

4. Monosyllables are generally written in full. (The abbreviating devices found in longer words are not applied to the monosyllable or its derivatives.) (7g; 45e)

man(7)  BUT manager(3) 

car(5)  BUT carbon 

cult  BUT adult(17) 

South-Western

2. (Observation: When circles other than basic vowel sounds join, the second circle is usually placed outside the line.)

daily(9) gaily

freely

EXCEPTION highly(17)

3. (Observation: In addition to a horizontal stroke, u is turned under after a bend ending with n or m.)

continue(3)

CR: J No. 3

4. Monosyllables: See Writing and Joining No. 15

Gregg

5. (Observation: An outline may be written to provide maximum facility in joining or to provide sufficient transcription clarity.

with(1)BF BUT either

us(1) BUT yours(1)BFD

about(1)BF BUT able(3) 

For example: Either could, according to principle, be written ; however, when written  sufficient transcription clarity is provided to distinguish it from the brief form with .

CR: WEJ No. 1; J Nos. 13, 17 for above examples.

Unique

6. The primitive root word is preserved whenever possible and as much of it as possible is included in the derivative. (4g)

refer(8)

AND reference(4)

South-Western

5. (Observation: An outline may be written to provide maximum transcription clarity.)

interstate SFR BUT interest(2) SF

us(1) BUT yours(1) SFR

*doctor(9) ABBR BUT dear(1) (dir)

CR: WBD No. 7; J No. 4; Undeclared V No. 1 for above examples.

*Used in this group for illustration only.

6. (Observation: An initial circle vowel preceding a downward curved stroke is placed on the inside of the curved stroke.)

agree(8)

ask(6) VS

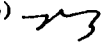
CR: J Nos. 7, 8

WRITING AND JOINING PRINCIPLES
(continued)

Gregg

7. The syllable is preserved wherever possible. (When an s occurs between strokes with no intervening circle vowel, s is written with the syllable to which it belongs. (3,5g)

distribution(5) 

instructions(5) 

8. When a choice of dual characters exists, the character is used that would normally be joined to the preceding character. (5g)

first(1)

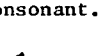
most(2)

9. When a circle vowel immediately precedes the s between consonant strokes, the s is treated as belonging to the preceding consonant. (3g)

last(2) 

best(2) 

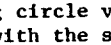
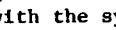
10. When a circle vowel immediately follows the s between consonant strokes, the s is treated as belonging to the succeeding consonant. (3g)

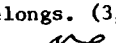
received(2) 

accept(5) 

South-Western

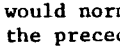
7. (Observation: An initial a or e vowel is joined on the top of a horizontal stroke.)

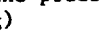
amount(2)  VS 

air(5)  VS

CR: J No. 7

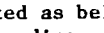
8. (Observation: An initial a or e vowel preceding an upward curved stroke is placed on the left of the curved stroke.

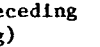
attend(6)  VS

either(5)  VS

CR: J Nos. 7, 8

9. (Observation: An initial long i is joined on the basis of the following stroke.)

I'm(9)  BUT among(8)

idea(9)  BUT add(7)

items(3) BUT attempt(17)

Gregg

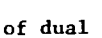
11. In words containing a double s, if the s is pronounced with the first syllable, it is joined with that first syllable even though the word may be divided between the s's. (6g)

dissolve

blossom

12. Left s is used after the under and over th.

theirs(38)

months(4) 

13. In some words ending in a loop, the plural is formed by changing the manner of joining s.

families(13)

CR: J No. 15

14. (Observation: In words consisting of s and the oo-hook, the comma s is used.)

just(2)

suggest(4)

CR: Joinings Nos. 13, 15

South-Western

WRITING AND JOINING PRINCIPLES
(continued)

Gregg

15. Normally, two reverse curves are joined without an angle; but when a vowel is omitted between two reverse curves (opposite directions), the curves are written with an angle to indicate the vowel omission. (9g)

flipper

BUT level(9)

CR: Undeclared V Nos. 6, 14

16. When three reverse curves in opposite directions come together, they are written with an angle to retain the distinctive form of each character. (9g)

conflict(40)

confront

CR: Undeclared V Nos. 6, 14

17. (Observation: The o-hook is placed on its side before k or gay.)

local(3)

catalog(10)

CR: J No. 12

South-Western

AUXILIARY RULES

Gregg

Similar

1. Underscore and Capital Letters: Two lines are drawn under an expression to be typed in all capital letters. One line is drawn under an expression to be underscored. (278h)

THIS WAY ONLY

Survey Form A

South-Western

1. Underscore and Capital Letters: Two wavy lines are drawn under an expression to be typed in all capital letters. One wavy line is drawn under an expression to be underscored. (53i example)

THIS WAY ONLY

Survey Form A

CR: A No. 10

Unique

2. (Observation: Two-word cities: For cities written with two separate shorthand outlines, capitalization marks are placed after the last outline only.

Fort Worth

Grand Rapids

CR: J No. 19; M No. 2

APPENDIX E

SUPPLEMENTAL DATA FOR THE MELLINGER 1,000 MOST FREQUENTLY USED WORDS ANALYSIS

Table E.1. Frequency of Textually Declared and Undeclared Decision Points of Gregg DJ Shorthand in Writing the First 1,000 Mellinger Words[a]

Decision Point[b]	f
TEXTUALLY DECLARED	
Blends:	
101 ded,det,ted	24
102 def,dif	2
103 dev,div	4
104 dem,tem	7
105 den,ten	17
106 men,mem	22
107 mt,md	3
108 nt,nd	57
109 ld	14
110 rd	16
111 ses	12
Blends: 178	
Consonants:	
201 ngk	1
202 w (beg. words)	16
203 w (body)	3
204 x	4
Consonants: 24	
Vowels:	
301 long i (vowel)	3
302 diphthong u	12
303 ia,ea	6
304 oi (oy)	9
305 ow (ou)	21
306 minor vowel(two)	20
307 short u (n,m)	13
308 -ition,-ation	10
Vowels: 94	
Word Beginnings--Disj.:	
401 ah-,aw-	2
402 circum-	-
403 electr-, electric	1
404 inter-,intr-, enter-,entr-	4
405 over-	-
406 post-	-
407 self-	-
408 super-	-
409 trans-	1
410 under-	2
Word Beg.Disj: 10	
Word Beginnings--Joined:	
501 al-	4
502 be-	9
503 com-,con-	24
504 de-,di	12
505 des-,dis-	6
506 em-,im-	4

Decision Point[b]	f
Word Beginning--Joined (continued):	
507 en-,in-,un-	22
508 ex-	15
509 for-,fore-,fur-	12
510 mis-	-
511 per-,pur-	13
512 re-	31
514 sub-	4
515 ul-	2
516 ya-	-
517 ye-	-
518 yo-	-
519 yoo-(yu sound)	-
Word Beg.Joined: 158	
Word Endings--Disj.:	
601 -cal,-cle	3
602 -gram	1
603 -hood	-
604 -ification	-
605 -ing	55
606 -ingham	-
607 -ingly	-
608 -ington	-
609 -ings	3
610 -lity,-lty	4
611 -rity	-
612 -ship	1
613 -ulate	-
614 -ward	2
Word End.Disj: 69	
Word Endings--Joined:	
701 -ble	5
702 -burg(h)	-
703 -cient,-ciency	1
704 -ern,-erm	5
705 -ful	3
707 -ily	1
709 -ly	28
710 -ment	18
712 -ology	-
713 -ort	4
714 -quent(-quence)	-
715 -quire	4
716 -self	2
717 -selves	-
718 -sume	-
719 -tain	6
720 -ther	8
721 -tial,-cial	5
722 -tion,(-sion)	59
723 -titude,-titute	-
724 -tribute	2
725 -ual,(-ial)	9
726 -ure,(-ior)	7
727 -ville	-
Word End.Joined: 167	

Decision Point[b]	f
Miscellaneous:	
801 business abbre.	-
802 city names	-
803 countries	1
804 days	-
805 intersection	-
807 months	-
809 quantities and amounts	-
810 states	-
Miscellaneous: 1	
Joinings:	
901 circles (inside curves outside angles)	548
902 circles (straight line)	86
903 circles (curves opposite dir.)	40
904 compound word (modified)	2
905 f joined with angle to r, l	-
906 f disjoined before vowel	1
907 jog	4
908 n (hundreds); m (millions); th (thousands)	-
909 o-hook before n, m	13
910 oo-hook after n, m	12
911 oo-s without angle	8
912 line placement: s precedes a downstroke	23
913 comma s before, after f,v,k,g	36
914 comma s before t,d,n,m,o	88
915 comma s before, after sh,ch,j	17
916 comma s, circle vowel with s, th	7
917 left s before, after p,b,r,l	98
918 left s after t,d,n,m,o	102
919 under th to o,r,l	9
Joinings: 1094	

Decision Point[b]	f
Auxiliary:	
001 contractions	3
002 capitalization	1
Auxiliary: 4	
TEXTUALLY DECLARED SUBTOTAL:	1799
TEXTUALLY UNDECLARED	
Blends:	
011 Blends used in derivatives	46
012 straight-line blends over curved-line	3
013 ten,den;tem,dem over ent,end; emt,emd	8
014 plural of brief forms ending in s	-
Blends: 57	
Consonants:	
None	
Vowels:	
021 oo-hook omitted r-l, downstroke	-
022 diphthong u before r,l	-
023 short u preceded by n	2
024 circle vowel omitted: k-r, g-r,k-l,g-l	3
025 circle vowel omitted: p-n, p-t,p-d,b-n, b-t,b-d	6
026 circle vowel omitted p-k (f-k, s-k)	9
027 vowel written in er,ar,or after long i, left s, straight downstroke	16
028 ending stressed er,ar,or	6
029 ending stressed el,al,ial,eal	5
030 ending stressed en,an,on,in	2
031 -ant,-ance,-ent -ence follow i,n,r,l	12

Table E.1. (continued)

Decision Point[b]	f
TEXTUALLY UNDECLARED (continued)	
Vowels (continued):	
032 -ble,-cal,-cle -lity represent preceding short vowel	12
033 -city,-vity vowel omitted	2
034 -fect,-ject vowel omitted	3
035 -sive vowel omitted	-
036 -tract,-trict, -truct vowel omitted	4
037 vowel may be omitted with three short-hand characters	4
038 -vent,-vention vowel omitted	1
Vowels: 87	
Word Beginnings--Disj.: None	
Word Beginnings--Joined:	
041 al- written out joined to vowel	1
042 for written out with short o	-
043 per, pur written out with r pronounced with following syllable or vowel not neutral sounding	2
Word Beg.Joined: 3	

Decision Point[b]	f
Word Endings--Disjoined:	
051 -ical,-acle with two syllables	1
052 -ion after n	-
Word End.Disj: 1	
Word Endings--Joined:	
055 -iety	-
056 -itis	-
057 -ntic	-
Word End.Joined: 0	
Miscellaneous:	
058 misc. abbr.	1
058 ordinal numbers	-
053 compound man-men	-
Miscellaneous: 1	
Joinings:	
061 root word	22
062 monosyllable written in full	2
063 principles applied even when syllables combined	33
064 s written with preceding syllable with no circle vowel intervening	8
065 dual character joined on basis of preceding character	9
066 s joining preceding circle vowel	20

Decision Point[b]	f
Joinings (continued):	
067 s joining following circle vowel	13
068 s joining with double s	-
069 left s joining, under and over th	3
070 s joining with ending loop	-
071 comma s with oo-hook	28
072 oo-hook turned under following r and l	18
073 second circle placed outside line	4
074 vowel omitted, two reverse curves written with angle	18
075 three reverse curves written with angle	-
076 outline written to attain joining facility or transcription clarity	7
077 o-hook on side before k, gay, under th	7
078 s stroke joining distinguished	-
079 i circle broken with consonant	12
Joinings: 204	
TEXTUALLY UNDECLARED SUBTOTAL:	353

Decision Point[b]	f
SUMMARY:	
Textually Declared Total: 1799	
Textually Undeclared Total: 353	
Combined Total: 2152	

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications, (Chicago: Chicago State College Publications Office, 1970).

[b]Listed by assigned computer code. Some missing computer codes occurred as refinements were made to the system tallies. A full explanation of each item may be found in Appendix D, Description of Gregg DJ and SW Century 21 Shorthand Systems.

Table E.2. Frequency of Textually Declared and Undeclared Decision Points of SW Century 21 Shorthand in Writing the First 1,000 Mellinger Words[a]

Decision Point[b]	f
TEXTUALLY DECLARED	
Bends & Blends:	
101 dd,dt,td	5
102 dm,dn	3
103 fr	26
104 gr,jr	18
105 ld	10
106 mm,mn	14
107 nd,nt,nv	47
108 nk	1
109 tm,tn	20
Bends & Blends: 144	
Consonants:	
201 internal y sound	1
Consonants: 1	
Vowels:	
301 long i (basic vowel following)	-
302 long i (homophones)	1
303 short i body	97
304 initial short i	6
305 oi,oy	6
306 ou,ow	13
307 beginning vowel root word	-
308 adjacent e's	-
309 initial short i, one-syllable in-	-
Vowels: 123	
Word Beginnings--Disj. & Compound Elements:	
401 electr-, electric-	1
402 inter-,intr-	4
403 over-	1
404 saint-	-
405 self-	-
406 super-,supr-	-
407 tran-,trans-	1
408 under-	3
Word Beg.Disj. & Com. Elements: 10	
Word Beginnings--Joined:	
501 al-	5
502 be-	10
503 de-	11
504 ex-	15
505 im-	-
506 in-	14
507 ind-,int-,inv-	9
Word Beginnings--Joined (continued):	
508 new-	-
509 per-,pur-	13
510 sub-	4
511 initial ya-	-
512 initial ye-	3
513 initial yi-	-
514 yo-	-
515 yu- sound	-
Word Beg.Joined: 84	
Word Endings--Disj.:	
601 -acle,-ical, -icle	3
602 -alogy,-ology	-
603 -bility	2
604 -casion,-cation	5
605 -cher,-ture	5
606 -ed	71
607 -er,-or (speed & contracted forms)	5
608 -ety,-ity	3
609 -hood	-
610 -ing	56
611 -ingly	-
612 -ings	2
613 -ive,-sive, -tive	4
614 -ous,-us	3
615 -sation,-zation	1
616 -scribe	1
617 -script	1
618 -ship	1
619 -titude,-titute, -tude	-
620 -tual	2
621 -ulate	-
622 -ward	2
Word End.Disj: 167	
Word Endings--Joined:	
701 -ble	6
702 -burg(h),-berg	-
703 -field	-
704 -ful	3
705 -gram	1
706 -graph	-
707 -ject	2
708 -ly	21
709 -ment	16
710 -port	-
711 -self	2
712 -selves	-
713 -ther,-thor	9
714 -ville	-
Word End.Joined: 60	
Miscellaneous:	
801 large cities	-
802 days	-
803 months	-
804 quantities	-
805 miscellaneous terms	2
806 ordinal numbers	2
807 compound man-men	-
808 states	-
Miscellaneous: 4	
Joinings:	
901 n (hundreds); m (millions)	-
902 jog	11
903 u after horizontal stroke	27
904 line placement: vowel precedes downstroke consonant	98
905 letters-lease	1
906 beginning vowel on straight stroke	38
907 disjoined word endings, joined	2
908 e in -ly	5
909 circle vowels, written in dominant dir.	533
910 s stroke joining distinguished	13
911 i circle broken with consonant	30
912 -ject drop t	-
913 one-syllable -ed,-ous,-us	-
914 tm,tn over nt	2
915 two-part outlines	-
916 inter,int,in priority	1
Joinings: 761	
Auxiliary:	
001 contractions	5
002 capitalization	1
003 numbers above two	1
Auxiliary: 7	
TEXTUALLY DECLARED SUBTOTAL:	1361
TEXTUALLY UNDECLARED	
Bends & Blends:	
011 dm,dn over nt in -dent	2
Bends & Blends: 2	
Consonants:	
021 x: k-s	2
022 q: k-v,w	5
Consonants: 7	
Vowels:	
031 short i written as aid	10
Vowels: 10	
Word Beginnings--Disj. & Compounds: None	
Word Beg.--Joined:	
041 un- over nd, nt,nv bend	1
042 ind-,inv- over in-	8
Word Beg.Joined: 9	
Word Endings--Disj.:	
051 -ed over principles or stroke sounds	71
Word End.Disj: 71	
Word Endings--Joined: None	
Miscellaneous:	
053 Cap. marks two outlines	-
Miscellaneous: 0	
Joinings:	
061 initial circle vowel preceding downward, curved stroke	51
062 outline provides transcription clarity	5
063 principles applied even when syllables combined	38
064 first principle when choice occurs	8

Table E.2. (continued)

Decision Point[b]	f	Decision Point[b]	f	Decision Point[b]	f	Decision Point[b]	f
TEXTUALLY UNDECLARED (continued)		Joinings (continued):		Joinings (continued):		SUMMARY:	
Joinings (continued):		069 initial a or e joined on top of horizontal line	34	071 initial long i joined on basis of following stroke	6	Textually Declared Total: 1361	
065 u after bend of horizontal stroke	3	070 initial a or e before upward, curved stroke joined on left	24	Joinings: 170		Textually Undeclared Total: 269	
068 second circle (other than basic vowel sounds) placed outside line	1			TEXTUALLY UNDECLARED SUBTOTAL:	269	Combined Total: 1630	

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications, (Chicago: Chicago State College Publications Office, 1970).

[b]Listed by assigned computer code. A full explanation of each item may be found in Appendix D, Description of Gregg DJ and SW Century 21 Shorthand Systems.

Table E.3. The First 100, 500, 1,000 Mellinger Words[a] with Weighted Frequencies and Percentages in Gregg DJ Shorthand by Theory Word Categories with Computer-Coded Principle Numbers[b]

Theory Word Categories with Computer-Coded Principle Numbers[c]	Words			Mellinger Weighted Frequency of Words			Percent of Mellinger Weighted Frequencies		
	First 100	First 500	First 1,000	First 100	First 500	First 1,000	First 100	First 500	First 1,000
Blends:									
101	-	10	24	--	1,122	1,835	--	0.32	0.43
102	-	-	2	--	--	88	--	--	0.02
103	-	3	4	--	256	298	--	0.07	0.07
104	1	5	7	724	1,105	1,220	0.32	0.31	0.29
105	-	5	17	--	595	1,197	--	0.17	0.28
106	1	9	22	347	1,359	2,003	0.15	0.38	0.47
107	-	-	3	--	--	149	--	--	0.04
108	1	21	57	7,808	10,343	12,049	3.44	2.91	2.83
109	-	3	14	--	338	881	--	0.10	0.21
110	-	6	16	--	638	1,136	--	0.17	0.27
111	-	8	12	--	911	1,114	--	0.26	0.26
Subtotal	3	70	178	8,879	16,667	21,970	3.91	4.69	5.17
Consonants:									
201	-	-	1	--	--	52	--	--	0.01
202	2	9	16	5,009	5,889	6,208	2.21	1.66	1.46
203	-	2	3	--	193	254	--	0.05	0.06
204	-	3	4	--	367	402	--	0.10	0.09
Subtotal	2	14	24	5,009	6,449	6,916	2.21	1.81	1.62
Vowels:									
301	-	1	3	--	79	154	--	0.02	0.04
302	1	7	12	346	1,173	1,423	0.15	0.33	0.33
303	-	5	6	--	749	797	--	0.21	0.19
304	-	3	9	--	258	554	--	0.07	0.13
305	3	8	21	1,096	1,939	2,510	0.48	0.55	0.59
306	1	9	20	990	1,883	2,374	0.44	0.53	0.56
307	1	5	13	469	973	1,327	0.21	0.27	0.31
308	1	3	10	597	949	1,272	0.26	0.27	0.30
Subtotal	7	41	94	3,498	8,003	10,411	1.54	2.25	2.45
Word Beg.--Disj.:									
401	-	-	2	--	--	76	--	--	0.02
403	-	-	1	--	--	37	--	--	0.01
404	-	2	4	--	472	558	--	0.13	0.13

Table E.3. (continued)

Theory Word Categories with Computer-Coded Principle Numbers[c]	Words			Mellinger Weighted Frequency of Words			Percent of Mellinger Weighted Frequencies		
	First 100	First 500	First 1,000	First 100	First 500	First 1,000	First 100	First 500	First 1,000
Word Beg.--Disj.: (continued)									
409	-	-	1	--	--	49	--	--	0.01
410	-	1	2	--	74	125	--	0.02	0.03
Subtotal	-	3	10	--	546	845	--	0.15	0.20
Word Beg.--Joined:									
501	1	2	4	496	603	693	0.22	0.17	0.16
502	-	5	9	--	697	873	--	0.20	0.21
503	-	11	24	--	1,199	1,767	--	0.34	0.42
504	-	3	12	--	452	886	--	0.13	0.21
505	-	1	6	--	73	331	--	0.02	0.08
506	-	2	4	--	248	348	--	0.07	0.08
507	1	12	22	597	1,789	2,253	0.26	0.50	0.53
508	-	3	15	--	244	808	--	0.07	0.19
509	1	6	12	597	1,465	1,746	0.26	0.41	0.41
511	-	5	13	--	555	905	--	0.16	0.21
512	-	15	31	--	1,871	2,641	--	0.53	0.62
514	-	1	4	--	92	243	--	0.03	0.06
515	-	-	2	--	--	124	--	--	0.03
Subtotal	3	66	158	1,690	9,288	13,618	0.74	2.63	3.21
Word End.--Disj.:									
601	-	1	3	--	86	173	--	0.02	0.04
602	1	1	1	430	430	430	0.19	0.12	0.10
605	1	23	55	422	2,906	4,474	0.19	0.82	1.05
609	-	1	3	--	90	192	--	0.03	0.04
610	-	2	4	--	163	264	--	0.05	0.06
612	-	-	1	--	--	53	--	--	0.01
614	-	1	2	--	141	191	--	0.04	0.04
Subtotal	2	29	69	852	3,816	5,777	0.38	1.08	1.34
Word End.--Joined:									
701	-	2	5	--	561	678	--	0.16	0.16
703	-	-	1	--	--	36	--	--	0.01
704	-	2	5	--	325	498	--	0.09	0.12
705	-	1	3	--	72	165	--	0.02	0.04
707	-	-	1	--	--	56	--	--	0.01
709	3	9	28	1,628	2,156	3,016	0.72	0.61	0.71
710	-	8	18	--	1,004	1,448	--	0.28	0.34

Table E.3. (continued)

Theory Word Categories with Computer-Coded Principle Numbers[c]	Words			Mellinger Weighted Frequency of Words			Percent of Mellinger Weighted Frequencies		
	First 100	First 500	First 1,000	First 100	First 500	First 1,000	First 100	First 500	First 1,000
Word End.--Joined: (continued)									
713	-	3	4	--	376	413	--	0.11	0.10
715	-	2	4	--	200	296	--	0.06	0.07
716	-	-	2	--	--	88	--	--	0.02
719	-	3	6	--	232	346	--	0.07	0.08
720	1	5	8	539	1,114	1,305	0.24	0.31	0.31
721	-	2	5	--	305	427	--	0.09	0.10
722	1	22	59	597	2,757	4,463	0.26	0.78	1.05
724	-	1	2	--	73	111	--	0.02	0.03
725	-	5	9	--	466	646	--	0.13	0.15
726	-	2	7	--	259	460	--	0.07	0.11
Subtotal	5	67	167	2,764	9,900	14,452	1.22	2.80	3.41
Miscellaneous:									
803	-	-	1	--	--	61	--	--	0.01
Subtotal	-	-	1	--	--	61	--	--	0.01
Joinings:									
901	25	250	548	25,957	53,062	67,077	11.43	14.95	15.76
902	7	36	86	3,726	7,767	10,132	1.64	2.19	2.38
903	-	18	40	--	1,965	2,966	--	0.55	0.70
904	1	2	2	327	475	475	0.14	0.13	0.11
906	-	-	1	--	--	50	--	--	0.01
907	-	-	4	--	--	175	--	--	0.04
909	2	7	13	3,199	3,675	3,951	1.41	1.04	0.93
910	2	4	12	1,036	1,293	1,675	0.46	0.36	0.39
911	1	3	8	1,017	1,343	1,580	0.45	0.38	0.37
912	1	10	23	329	1,254	1,874	0.14	0.35	0.44
913	2	19	36	894	2,857	3,669	0.39	0.80	0.86
914	2	33	88	986	4,782	7,401	0.43	1.35	1.74
915	-	4	17	--	427	1,015	--	0.12	0.24
916	3	4	7	4,462	4,658	4,807	1.96	1.31	1.13
917	5	41	98	2,492	6,475	9,145	1.10	1.82	2.15
918	2	33	102	1,396	5,739	8,901	0.61	1.62	2.09
919	-	3	9	--	552	857	--	0.16	0.20
Subtotal	53	467	1,094	45,821	96,324	125,750	20.16	27.13	29.54

Table E.3. (continued)

Theory Word Categories with Computer-Coded Principle Numbers[c]	Words			Mellinger Weighted Frequency of Words			Percent of Mellinger Weighted Frequencies		
	First 100	First 500	First 1,000	First 100	First 500	First 1,000	First 100	First 500	First 1,000
Auxiliary:									
001	-	1	3	--	89	181	--	0.03	0.04
002	-	-	1	--	--	61	--	--	0.01
Subtotal	-	1	4	--	89	242	--	0.03	0.05
Undeclared:									
011	-	17	46	--	1,765	3,242	--	0.50	0.76
012	-	-	3	--	--	150	--	--	0.04
013	-	1	8	--	74	444	--	0.02	0.10
023	1	1	2	327	327	372	0.14	0.09	0.09
024	-	1	3	--	118	205	--	0.03	0.05
025	-	2	6	--	146	348	--	0.04	0.08
026	-	-	9	--	--	433	--	--	0.10
027	2	11	16	1,138	1,989	2,228	0.50	0.56	0.52
028	-	-	6	--	--	266	--	--	0.06
029	-	2	5	--	200	316	--	0.06	0.07
030	-	-	2	--	--	75	--	--	0.02
031	-	5	12	--	667	981	--	0.19	0.23
032	-	5	12	--	810	1,115	--	0.23	0.26
033	-	-	2	--	--	122	--	--	0.03
034	-	2	3	--	194	254	--	0.05	0.06
036	-	3	4	--	251	301	--	0.07	0.07
037	-	1	4	--	171	339	--	0.05	0.08
038	-	-	1	--	--	51	--	--	0.01
041	-	1	1	--	91	91	--	0.03	0.02
043	-	1	2	--	145	182	--	0.04	0.04
051	-	1	1	--	107	107	--	0.03	0.03
058	-	1	1	--	94	94	--	0.03	0.02
061	-	8	22	--	758	1,334	--	0.21	0.31
062	-	1	2	--	133	187	--	0.04	0.04
063	-	12	33	--	1,337	2,403	--	0.38	0.56
064	-	2	8	--	148	469	--	0.04	0.11
065	1	4	9	345	951	1,220	0.15	0.27	0.29
066	-	7	20	--	866	1,508	--	0.24	0.35
067	-	7	13	--	813	1,119	--	0.23	0.26
069	-	2	3	--	276	337	--	0.08	0.08

Table E.3. (continued)

Theory Word Categories with Computer-Coded Principle Numbers[c]	Words			Mellinger Weighted Frequency of Words			Percent of Mellinger Weighted Frequencies		
	First 100	First 500	First 1,000	First 100	First 500	First 1,000	First 100	First 500	First 1,000
Undeclared (continued):									
071	2	9	28	1,948	2,722	3,676	0.85	0.77	0.86
072	1	10	18	576	1,611	1,990	0.25	0.45	0.47
073	-	2	4	--	183	280	--	0.05	0.07
074	-	5	18	--	504	1,171	--	0.14	0.28
076	1	5	7	931	1,520	1,636	0.41	0.43	0.38
077	-	2	7	--	186	419	--	0.05	0.10
079	-	5	12	--	509	843	--	0.14	0.20
Subtotal	8	136	353	5,265	19,666	30,308	2.30	5.54	7.10
TOTAL	83	894	2,152	73,778	170,748	230,350	32.46	48.11	54.10

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]The shorthand account of the computer-coded numbers is given in Table E.1., Appendix E.

[c]Only the computer-coded numbers with occurrences are listed. The categories represent a breakdown of the summary information presented in Table 5.11., page 204.

Table E.4. The First 100, 500, 1,000 Mellinger Words[a] with Weighted Frequencies and Percentages in SW Century 21 Shorthand by Theory Word Categories with Computer-Coded Principle Numbers[b]

Theory Word Categories with Computer-Coded Principle Numbers[c]	Words			Mellinger Weighted Frequency of Words			Percent of Mellinger Weighted Frequencies		
	First 100	First 500	First 1,000	First 100	First 500	First 1,000	First 100	First 500	First 1,000
Bends & Blends:									
101	-	3	5	--	339	444	--	0.11	0.12
102	-	-	3	--	--	154	--	--	0.04
103	2	10	26	5,450	6,673	7,407	2.69	2.16	2.01
104	-	8	18	--	684	1,108	--	0.22	0.30
105	-	4	10	--	435	712	--	0.14	0.19
106	1	6	14	347	965	1,383	0.17	0.31	0.37
107	1	15	47	7,808	9,580	11,088	3.86	3.10	3.01
108	-	-	1	--	--	52	--	--	0.01
109	1	10	20	724	1,670	2,166	0.36	0.54	0.59
Subtotal	5	56	144	14,329	20,346	24,514	7.08	6.58	6.64
Consonants:									
201	-	-	1	--	--	48	--	--	0.01
Subtotal	-	-	1	--	--	48	--	--	0.01
Vowels:									
302	-	-	1	--	--	37	--	--	0.01
303	3	33	97	4,484	8,041	16,065	2.21	2.60	3.00
304	-	1	6	--	76	328	--	0.02	0.09
305	-	2	6	--	159	355	--	0.05	0.10
306	3	5	13	1,096	1,438	1,819	0.54	0.47	0.49
Subtotal	6	41	123	5,580	9,714	13,604	2.75	3.14	3.69
Word Beg.--Disj.:									
401	-	-	1	--	--	37	--	--	0.01
402	-	2	4	--	472	558	--	0.15	0.15
403	-	1	1	--	246	246	--	0.08	0.07
407	-	-	1	--	--	49	--	--	0.01
408	-	2	3	--	352	403	--	0.11	0.11
Subtotal	-	5	10	--	1,070	1,293	--	0.34	0.35
Word Beg.--Joined									
501	1	3	5	496	694	784	0.24	0.22	0.21
502	-	6	10	--	918	1,094	--	0.30	0.30
503	-	4	11	--	529	871	--	0.17	0.24
504	-	3	15	--	244	808	--	0.08	0.22

Table E.4. (continued)

Theory Word Categories with Computer-Coded Principle Numbers[c]	Words			Mellinger Weighted Frequency of Words			Percent of Mellinger Weighted Frequencies		
	First 100	First 500	First 1,000	First 100	First 500	First 1,000	First 100	First 500	First 1,000
Word Beg.--Joined: (continued)									
506	–	7	14	--	811	1,111	--	0.26	0.30
507	–	7	9	--	708	796	--	0.23	0.22
509	–	5	13	--	555	905	--	0.18	0.25
510	–	1	4	--	92	243	--	0.03	0.07
512	1	2	3	430	659	703	0.21	0.21	0.19
Subtotal	2	38	84	926	5,210	7,315	0.45	1.68	2.00
Word End.--Disj.:									
601	–	1	3	--	86	173	--	0.03	0.05
603	–	–	2	--	--	101	--	--	0.03
604	–	1	5	--	108	286	--	0.03	0.08
605	–	1	5	--	192	340	--	0.06	0.09
606	1	20	71	469	2,841	5,351	0.23	0.92	1.45
607	–	1	5	--	76	259	--	0.02	0.07
608	–	1	3	--	92	211	--	0.03	0.06
610	1	24	56	422	3,190	4,758	0.21	1.03	1.29
612	–	–	2	--	--	102	--	--	0.03
613	–	2	4	--	191	283	--	0.06	0.08
614	–	–	3	--	--	147	--	--	0.04
615	–	–	1	--	--	44	--	--	0.01
616	–	–	1	--	--	49	--	--	0.01
617	–	–	1	--	--	43	--	--	0.01
618	–	–	1	--	--	53	--	--	0.01
620	–	–	2	--	--	84	--	--	0.02
622	–	1	2	--	141	191	--	0.05	0.05
Subtotal	2	52	167	891	6,917	12,475	0.44	2.23	3.38
Word End.--Joined:									
701	–	2	6	--	561	716	--	0.18	0.19
704	–	1	3	--	72	165	--	0.02	0.04
705	1	1	1	430	430	430	0.21	0.14	0.12
707	–	2	2	--	170	170	--	0.06	0.05
708	2	6	21	964	1,301	1,998	0.48	0.42	0.54
709	–	7	16	--	689	1,095	--	0.22	0.30
711	–	–	2	--	--	88	--	--	0.02
713	1	5	9	539	1,114	1,340	0.27	0.36	0.36
Subtotal	4	24	60	1,933	4,337	6,002	0.96	1.40	1.62

Table E.4. (continued)

Theory Word Categories with Computer-Coded Principle Numbers[c]	Words			Mellinger Weighted Frequency of Words			Percent of Mellinger Weighted Frequencies		
	First 100	First 500	First 1,000	First 100	First 500	First 1,000	First 100	First 500	First 1,000
Miscellaneous:									
805	-	1	2	--	94	155	--	0.03	0.04
806	1	2	2	345	418	418	0.17	0.14	0.11
Subtotal	1	3	4	345	152	573	0.17	0.17	0.15
Joinings:									
902	-	-	11	--	--	497	--	--	0.13
903	3	14	27	1,612	2,997	3,583	0.80	0.97	0.97
904	6	39	98	3,816	7,823	10,628	1.89	2.53	2.88
905	-	-	1	--	--	40	--	--	0.01
906	1	16	38	420	2,624	3,644	0.21	0.85	0.99
907	-	-	2	--	--	99	--	--	0.03
908	-	-	5	--	--	219	--	--	0.06
909	24	233	533	17,053	42,603	56,751	8.42	13.78	15.38
910	-	4	13	--	412	824	--	0.13	0.22
911	-	9	30	--	1,073	2,063	--	0.35	0.56
914	-	-	2	--	--	103	--	--	0.03
916	-	1	1	--	214	214	--	0.07	0.06
Subtotal	34	316	761	22,901	57,746	78,665	11.32	18.68	21.32
Auxiliary:									
001	-	2	5	--	164	295	--	0.05	0.08
002	-	-	1	--	--	61	--	--	0.02
003	-	1	1	--	134	134	--	0.04	0.04
Subtotal	-	3	7	--	298	490	--	0.09	0.14
Undeclared:									
011	-	-	2	--	--	108	--	--	0.03
021	-	1	2	--	126	161	--	0.04	0.04
022	-	3	5	--	315	414	--	0.10	0.11
031	1	3	10	990	1,240	1,528	0.49	0.40	0.41
041	-	1	1	--	149	149	--	0.05	0.04
042	-	6	8	--	494	582	--	0.16	0.16
051	1	20	71	469	2,841	5,351	0.23	0.92	1.45

Table E.4. (continued)

Theory Word Categories with Computer-Coded Principle Numbers[c]	Words			Mellinger Weighted Frequency of Words			Percent of Mellinger Weighted Frequencies		
	First 100	First 500	First 1,000	First 100	First 500	First 1,000	First 100	First 500	First 1,000
Undeclared (continued):									
061	2	18	51	1,537	3,243	4,797	0.76	1.05	1.30
062	1	3	5	931	1,403	1,502	0.46	0.45	0.41
063	-	17	38	--	1,709	2,740	--	0.55	0.74
064	-	1	8	--	136	456	--	0.04	0.12
065	-	1	3	--	136	221	--	0.04	0.06
068	-	-	1	--	--	39	--	--	0.01
069	1	15	34	430	2,362	3,231	0.21	0.76	0.88
070	1	8	24	440	1,355	2,191	0.22	0.44	0.59
071	-	2	6	--	190	353	--	0.06	0.10
Subtotal	7	99	269	4,797	15,699	23,823	2.37	5.06	6.45
TOTAL	61	637	1,630	51,702	121,849	168,802	25.54	39.37	45.75

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]The shorthand account of the computer-coded numbers is given in Table E.2., Appendix E.

[c]Only the computer-coded numbers with occurrences are listed. The categories represent a breakdown of the summary information presented in Table 5.12., page 206.

APPENDIX F

SUPPLEMENTAL DATA FOR THE SHORTHAND TEXTBOOK ANALYSIS

WORDS FROM THE FIRST 1,000 MELLINGER WORDS[a] MISSING FROM THE GREGG DJ AND SW CENTURY 21 SHORTHAND TEXTBOOKS[b]

GREGG TEXT (50)				SOUTH-WESTERN (6)	
No.	Word	No.	Word	No.	Word
204	including	767	student	475*	premium
276	balance	775	code	618	vision
313	appreciated	778	conversation	765	reviewed
334	etc.	783	examination	772	careers
363	you'll	786	insured	819*	corporate
369	approximately	819	corporate	862*	executed
388	property	825	I'm		
462	separate	847	freight		
465	individual	850	herewith		
474	plus	856	proposal		
475*	premium	862*	executed		
478	regards	865	fully		
485	desire	871	previously		
527	specific	874	recommendations		
557#	American	888	participate		
581	proposed	892	provisions		
582	university	898	accordance		
595	location	900	applicable		
623	limited	901+	cents		
659	administration	905	council		
671	handled	944	participation		
673	net	965	includes		
674	process	978	steel		
678	units	983	adjustment		
716	outside	993	communications		
760	premiums	999+	percent		

[a]Morris Mellinger, The Basic Vocabulary for Written Business Office Communications (Chicago: Chicago State College Publications Office, 1970).

[b]Louis A. Leslie et al., Gregg Shorthand for Colleges, Diamond Jubilee Series, 2nd ed., vol. 1 (New York: Gregg Division/McGraw-Hill Book Co., 1973); Irol W. Balsley, Century 21 Shorthand, Theory and Practice, Collegiate Series, book 1 (Cincinnati: South-Western Publishing Co., 1974).

*Common nonoccurrence between systems.

#American does not appear within the lesson-structured copy of the textbook analyzed in this study. It appears in the appendix.

+Percentx (with figure) and centsx (with figure) occur in the Gregg text; therefore, 50 words are missing.

SAMPLE COMPUTER PRINTOUT OF TOTAL-COPY TALLIES FOR MELLINGER WORDS NOS. 990-1,000 IN THE GREGG TEXTBOOK

Rank	Word	f	Total-Copy Word Number	Words Between Occurrences
990	BOX	1.00	15157.00	15157.00
991	CAREFULLY	1.00	16000.00	16000.00
991	CAREFULLY	2.00	16136.00	136.00
991	CAREFULLY	3.00	16381.00	245.00
991	CAREFULLY	4.00	18225.00	1844.00
991	CAREFULLY	5.00	20474.00	2249.00
991	CAREFULLY	6.00	34221.00	13747.00
991	CAREFULLY	7.00	35785.00	1564.00
991	CAREFULLY	8.00	38208.00	2423.00
992	CARRY	1.00	992.00	992.00
992	CARRY	2.00	7603.00	6611.00
992	CARRY	3.00	8469.00	866.00
992	CARRY	4.00	25133.00	16664.00
992	CARRY	5.00	27436.00	2303.00
992	CARRY	6.00	32049.00	4613.00
994	DIRECT	1.00	8218.00	8218.00
994	DIRECT	2.00	16687.00	8469.00
994	DIRECT	3.00	32388.00	15701.00
994	DIRECT	4.00	33290.00	902.00
995	DIRECTORS	1.00	8359.00	8359.00
995	DIRECTORS	2.00	22063.00	13704.00
995	DIRECTORS	3.00	31925.00	9862.00
995	DIRECTORS	4.00	40500.00	8575.00
996	FIGURES	1.00	17748.00	17748.00
996	FIGURES	2.00	17797.00	49.00
997	INITIAL	1.00	3220.00	3220.00
997	INITIAL	2.00	4382.00	1162.00
997	INITIAL	3.00	5075.00	693.00
997	INITIAL	4.00	9664.00	4589.00
997	INITIAL	5.00	20696.00	11032.00
997	INITIAL	6.00	24718.00	4022.00
998	NATURE	1.00	17167.00	17167.00
998	NATURE	2.00	20547.00	3380.00
998	NATURE	3.00	24702.00	4155.00
998	NATURE	4.00	27981.00	3279.00
1000	PERSONS	1.00	8264.00	8264.00
1000	PERSONS	2.00	8289.00	25.00
1000	PERSONS	3.00	8689.00	400.00
1000	PERSONS	4.00	11525.00	2836.00
1000	PERSONS	5.00	11993.00	468.00
1000	PERSONS	6.00	12081.00	88.00
1000	PERSONS	7.00	13352.00	1271.00
1000	PERSONS	8.00	13364.00	12.00
1000	PERSONS	9.00	17252.00	3888.00
1000	PERSONS	10.00	21173.00	3921.00
1000	PERSONS	11.00	21316.00	143.00

SAMPLE COMPUTER PRINTOUT OF TOTAL-COPY TALLIES FOR MELLINGER WORDS NOS. 990-1,000 IN THE GREGG TEXTBOOK
(continued)

Rank	Words	f	Total-Copy Word Number	Words Between Occurrences
1000	PERSONS	12.00	22793.00	1477.00
1000	PERSONS	13.00	22816.00	23.00
01001	PERCENTX	1.00	2626.00	2626.00
01001	PERCENTX	2.00	2928.00	302.00
01001	PERCENTX	3.00	5142.00	2214.00
01001	PERCENTX	4.00	5372.00	230.00
01001	PERCENTX	5.00	6644.00	1272.00
01001	PERCENTX	6.00	8887.00	2243.00
01001	PERCENTX	7.00	10000.00	1113.00
01001	PERCENTX	8.00	11107.00	1107.00
01001	PERCENTX	9.00	11475.00	368.00
01001	PERCENTX	10.00	12426.00	951.00
01001	PERCENTX	11.00	12436.00	10.00
01001	PERCENTX	12.00	12447.00	11.00
01001	PERCENTX	13.00	12755.00	308.00
01001	PERCENTX	14.00	13893.00	1138.00
01001	PERCENTX	15.00	16331.00	2438.00
01001	PERCENTX	16.00	20301.00	3970.00
01001	PERCENTX	17.00	25752.00	5451.00
01001	PERCENTX	18.00	27538.00	1786.00
01001	PERCENTX	19.00	27555.00	17.00
01001	PERCENTX	20.00	28964.00	1409.00
01001	PERCENTX	21.00	36622.00	7658.00
01001	PERCENTX	22.00	37280.00	658.00
01001	PERCENTX	23.00	41653.00	4373.00
01001	PERCENTX	24.00	41719.00	66.00
01001	PERCENTX	25.00	41727.00	8.00
01001	PERCENTX	26.00	41735.00	8.00
01001	PERCENTX	27.00	42208.00	473.00
01001	PERCENTX	28.00	42868.00	660.00
01001	PERCENTX	29.00	42949.00	81.00
01001	PERCENTX	30.00	44579.00	1630.00
01002	CENTSX	1.00	12364.00	12364.00

SAMPLE COMPUTER PRINTOUT OF TOTAL-COPY TALLIES FOR MELLINGER WORDS NOS. 990-1,000 IN THE SOUTH-WESTERN TEXTBOOK

Rank	Words	f	Total-Copy Word Number	Words Between Occurrences
990	BOX	1.00	11313.00	11313.00
990	BOX	2.00	11334.00	21.00
990	BOX	3.00	20659.00	9325.00
990	BOX	4.00	33856.00	13197.00
991	CAREFULLY	1.00	16222.00	16222.00
991	CAREFULLY	2.00	20775.00	4553.00
991	CAREFULLY	3.00	26399.00	5624.00
991	CAREFULLY	4.00	30076.00	3677.00
991	CAREFULLY	5.00	31199.00	1123.00
991	CAREFULLY	6.00	42107.00	10908.00
991	CAREFULLY	7.00	44745.00	2638.00
991	CAREFULLY	8.00	45352.00	607.00
991	CAREFULLY	9.00	45584.00	232.00
992	CARRY	1.00	20388.00	20388.00
992	CARRY	2.00	23758.00	3370.00
992	CARRY	3.00	43470.00	19712.00
992	CARRY	4.00	46096.00	2626.00
993	COMMUNICATIONS	1.00	21053.00	21053.00
993	COMMUNICATIONS	2.00	21113.00	60.00
993	COMMUNICATIONS	3.00	25827.00	4714.00
993	COMMUNICATIONS	4.00	26657.00	830.00
993	COMMUNICATIONS	5.00	26682.00	25.00
993	COMMUNICATIONS	6.00	46520.00	19838.00
994	DIRECT	1.00	1890.00	1890.00
994	DIRECT	2.00	1921.00	31.00
994	DIRECT	3.00	1960.00	39.00
994	DIRECT	4.00	2637.00	677.00
994	DIRECT	5.00	2915.00	278.00
994	DIRECT	6.00	3263.00	348.00
994	DIRECT	7.00	5385.00	2122.00
994	DIRECT	8.00	6644.00	1259.00
994	DIRECT	9.00	7426.00	782.00
994	DIRECT	10.00	8600.00	1174.00
994	DIRECT	11.00	14565.00	5965.00
994	DIRECT	12.00	15675.00	1110.00
994	DIRECT	13.00	19648.00	3973.00
994	DIRECT	14.00	26178.00	6530.00
994	DIRECT	15.00	34783.00	8605.00
994	DIRECT	16.00	43227.00	8444.00
995	DIRECTORS	1.00	13961.00	13961.00
995	DIRECTORS	2.00	14788.00	827.00
995	DIRECTORS	3.00	14889.00	101.00
995	DIRECTORS	4.00	15328.00	439.00
995	DIRECTORS	5.00	28778.00	13450.00

SAMPLE COMPUTER PRINTOUT OF TOTAL-COPY TALLIES FOR MELLINGER WORDS NOS. 990-1,000 IN THE SOUTH-WESTERN TEXTBOOK
(continued)

Rank	Words	f	Total-Copy Word Number	Words Between Occurrences
995	DIRECTORS	6.00	39251.00	10473.00
995	DIRECTORS	7.00	39996.00	745.00
995	DIRECTORS	8.00	40700.00	704.00
995	DIRECTORS	9.00	40910.00	210.00
996	FIGURES	1.00	12056.00	12056.00
996	FIGURES	2.00	13503.00	1447.00
996	FIGURES	3.00	13824.00	321.00
996	FIGURES	4.00	16288.00	2464.00
996	FIGURES	5.00	23077.00	6789.00
996	FIGURES	6.00	26820.00	3743.00
996	FIGURES	7.00	29633.00	2813.00
996	FIGURES	8.00	32855.00	3222.00
996	FIGURES	9.00	43233.00	10378.00
996	FIGURES	10.00	43255.00	22.00
996	FIGURES	11.00	49209.00	5954.00
997	INITIAL	1.00	20258.00	20258.00
997	INITIAL	2.00	20274.00	16.00
997	INITIAL	3.00	49099.00	28825.00
997	INITIAL	4.00	49131.00	32.00
998	NATURE	1.00	18023.00	18023.00
998	NATURE	2.00	23437.00	5414.00
998	NATURE	3.00	46326.00	22889.00
999	PERCENT	1.00	48600.00	48600.00
1000	PERSONS	1.00	10881.00	10881.00
1000	PERSONS	2.00	12060.00	1179.00
1000	PERSONS	3.00	12971.00	911.00
1000	PERSONS	4.00	14552.00	1581.00
1000	PERSONS	5.00	21647.00	7095.00
1000	PERSONS	6.00	27567.00	5920.00
1000	PERSONS	7.00	35921.00	8354.00
1000	PERSONS	8.00	39022.00	3101.00
1000	PERSONS	9.00	50879.00	11857.00
1000	PERSONS	10.00	51521.00	642.00
01001	PERCENTX	1.00	11471.00	11471.00
01001	PERCENTX	2.00	11504.00	33.00
01001	PERCENTX	3.00	12203.00	699.00
01001	PERCENTX	4.00	12444.00	241.00
01001	PERCENTX	5.00	12880.00	436.00
01001	PERCENTX	6.00	13518.00	638.00
01001	PERCENTX	7.00	22720.00	9202.00
01001	PERCENTX	8.00	22740.00	20.00
01001	PERCENTX	9.00	22758.00	18.00

SAMPLE COMPUTER PRINTOUT OF TOTAL-COPY TALLIES FOR MELLINGER WORDS NOS. 990-1,000 IN THE SOUTH-WESTERN TEXTBOOK
(continued)

Rank	Words	f	Total-Copy Word Number	Words Between Occurrences
01001	PERCENTX	10.00	22764.00	6.00
01001	PERCENTX	11.00	22773.00	9.00
01001	PERCENTX	12.00	23390.00	617.00
01001	PERCENTX	13.00	28204.00	4814.00
01001	PERCENTX	14.00	28724.00	520.00
01001	PERCENTX	15.00	28744.00	20.00
01001	PERCENTX	16.00	28761.00	17.00
01001	PERCENTX	17.00	28771.00	10.00
01001	PERCENTX	18.00	29347.00	576.00
01001	PERCENTX	19.00	30001.00	654.00
01001	PERCENTX	20.00	30014.00	13.00
01001	PERCENTX	21.00	30461.00	447.00
01001	PERCENTX	22.00	31089.00	628.00
01001	PERCENTX	23.00	42038.00	10949.00
01001	PERCENTX	24.00	42199.00	161.00
01001	PERCENTX	25.00	47836.00	5637.00
01001	PERCENTX	26.00	48744.00	909.00
01001	PERCENTX	27.00	48749.00	5.00
01001	PERCENTX	28.00	50588.00	1839.00
01001	PERCENTX	29.00	50833.00	245.00
01001	PERCENTX	30.00	50944.00	111.00
01001	PERCENTX	31.00	50959.00	15.00
01002	CENTSX	1.00	11470.00	11470.00
01002	CENTSX	2.00	11513.00	43.00
01002	CENTSX	3.00	12180.00	667.00
01002	CENTSX	4.00	17442.00	5262.00
01002	CENTSX	5.00	33850.00	16408.00

SAMPLE COMPUTER PRINTOUT OF POINT OF INTRODUCTION RATIO

RANK	WORD	G POINT	SW POINT	RATIO	RATIO SQUARED
00001	THE	1054	615	0.5834	0.3403
00002	OF	1053	959	0.9107	0.8293
00003	TO	653	203	0.3123	0.0975
00004	AND	4392	3273	0.7452	0.5553
00005	IN	252	1650	1.8473	3.4125
00006	YOU	1055	1	0.0009	0.0000
00007	A	255	95	0.3725	0.1387
00008	FOR	2572	6034	1.5738	2.4768
00009	WE	5639	714	0.1266	0.0160
00010	YOUR	1056	103	0.0975	0.0095
	SUM =	0	0	6.5702	7.8762
N=	10 SUM_RATIO=	3.5594 SIGMA_RATIO=		0.6288 V_RATIO=	0.3955
00011	BE	2569	5656	1.5458	2.3894
00012	IS	1050	100	0.0952	0.0090
00013	THIS	2571	1300	0.5056	0.2556
00014	THAT	1058	614	0.5803	0.3367
00015	WILL	250	953	1.7377	3.0196
00016	ON	2153	1680	0.7803	0.6088
00017	OUR	247	372	1.3361	1.7851
00018	AS	981	98	0.0998	0.0099
00019	ARE	246	370	1.3352	1.7827
00020	HAVE	254	761	1.6663	2.7765
00021	WITH	1057	762	0.7209	0.5196
00022	IT	257	241	0.9377	0.8792
00023	I	249	12	0.0481	0.0023
00024	AT	258	240	0.9302	0.8652
00025	BY	2570	5658	1.5458	2.3894
00026	OR	130	1820	1.9286	3.7194
00027	WHICH	2568	6806	1.6227	2.6331
00028	IF	1014	1519	1.3325	1.7755
00029	NOT	253	1651	1.8468	3.4106
00030	WOULD	2573	1894	0.7361	0.5418
00031	FROM	4397	6237	1.2951	1.6772
00032	HAS	984	6808	1.8555	3.4428
00033	AN	256	96	0.3750	0.1406
00034	US	5623	1123	0.1997	0.0398
00035	DEAR	127	3673	1.9655	3.8631
00036	ALL	2003	3775	1.4695	2.1594
00037	ANY	1011	1649	1.3870	1.9237
00038	MR	245	14746	1.9834	3.9338
00039	YOURS	1811	573	0.3163	0.1000
00040	CAN	1052	1367	1.2305	1.5141
00041	WAS	4391	764	0.1739	0.0302
00042	PLEASE	293	6436	1.9545	3.8200
00043	BEEN	2133	5657	1.6230	2.6341
00044	THESE	1032	559	0.5416	0.2933
00045	VERY	2015	956	0.4744	0.2250
00046	ONE	7000	1653	0.2361	0.0557
00047	TIME	11901	10385	0.8726	0.7614
00048	NEW	11922	1596	0.1338	0.0179
00049	DO	655	1807	1.6376	2.6817
00050	SINCERELY	2019	8137	1.7519	3.0691
	SUM =	0	0	49.3788	69.9707
N=	50 SUM_RATIO=	21.2054 SIGMA_RATIO=		0.6578 V_RATIO=	0.4328

SAMPLE COMPUTER PRINTOUT OF POINT OF INTRODUCTION RATIO
(continued)

RANK	WORD	G POINT	SW POINT	RATIO	RATIO SQUARED
00051	MAY	21	6186	1.9967	3.9868
00052	SHOULD	4390	4345	0.9897	0.9795
00053	LETTER	1008	951	0.9434	0.8900
00054	INFORMATION	18704	6119	0.3271	0.1069
00055	THEY	4395	560	0.1274	0.0162
00056	TRULY	2013	12696	1.8415	3.3911
00057	OTHER	9939	11383	1.1269	1.2699
00058	THERE	2566	617	0.2404	0.0577
00059	NO	117	1598	1.9268	3.7125
00060	MORE	462	6233	1.9259	3.7090
00061	SO	112	32	0.2857	0.0816
00062	BUT	1060	5696	1.8140	3.2905
00063	WHEN	4394	3284	0.7473	0.5584
00064	COMPANY	9377	6434	0.6861	0.4707
00065	KNOW	1086	1597	1.3200	1.7423
00066	ALSO	17832	12702	0.7123	0.5073
00067	SERVICE	1090	1149	1.0514	1.1054
00068	ENCLOSED	5668	3872	0.6831	0.4666
00069	SOME	15172	6188	0.4078	0.1663
00070	ME	27	6379	1.9958	3.9832
00071	WERE	5603	4626	0.8256	0.6816
00072	ORDER	5608	1892	0.3373	0.1137
00073	EACH	638	6770	1.9058	3.6320
00074	POLICY	7199	22486	1.6799	2.8220
00075	ABOUT	7002	5655	0.8076	0.6522
00076	PROGRAM	27285	18467	0.6768	0.4580
00077	YEAR	5604	14324	1.6088	2.5882
00078	THANK	5611	9141	1.3862	1.9215
00079	OFFICE	2106	2847	1.2603	1.5883
00080	HE	149	102	0.6845	0.4685
00081	NOW	9924	10640	1.0673	1.1391
00082	THEIR	2567	616	0.2399	0.0575
00083	ONLY	2616	8129	1.6782	2.8163
00084	THEM	4398	6241	1.2954	1.6780
00085	MADE	40	6184	1.9936	3.9744
00086	OUT	10506	10509	1.0003	1.0006
00087	BUSINESS	7007	5659	0.8076	0.6522
00088	COPY	1999	6378	1.6866	2.8446
00089	WORK	5606	1372	0.2447	0.0598
00090	TWO	651	205	0.3149	0.0991
00091	THAN	7008	1656	0.2363	0.0558
00092	AM	244	6232	1.9609	3.8451
00093	WHO	661	7066	1.9065	3.6347
00094	MANY	7630	8229	1.0728	1.1508
00095	USE	10508	116	0.0110	0.0001
00096	FIRST	1409	9151	1.8461	3.4080
00097	MAKE	670	6185	1.8917	3.5785
00098	SUCH	10503	9148	0.8709	0.7584
00099	HOWEVER	27310	10531	0.3856	0.1486
00100	NUMBER	5625	6240	1.0986	1.2069
	SUM =	0	0	103.3098	147.4994

N= 100 SUM_RATIO= 40.7703 SIGMA_RATIO= 0.6417 V_RATIO= 0.4118

SAMPLE COMPUTER PRINTOUT FOR ABSOLUTE PERCENTAGE DEVIATION FROM ADJUSTED MELLINGER FREQUENCY

RANK	WORD	MELL.FREQ.	% OF MELL.	FREQ.(GG)	% TOT(GG)	FREQ.(SW)	% TOT(SW)	% DEV.(GG)		% DEV.(SW)	
00001	THE	17826	6.0121	1863	4.0646	3060	5.9376	1.9475	3.7927	0.0745	0.0055
00002	OF	10793	3.6401	1165	2.5417	1376	2.6700	1.0984	1.2064	0.9701	0.9410
00003	TO	9653	3.2556	1497	3.2661	1873	3.6344	0.0105	0.0001	0.3788	0.1434
00004	AND	7834	2.6422	653	1.4247	631	1.2244	1.2175	1.4823	1.4178	2.0101
00005	IN	6504	2.1936	859	1.8741	945	1.8337	0.3195	0.1020	0.3599	0.1295
00006	YOU	5771	1.9464	1312	2.8624	984	1.9093	0.9160	0.8390	0.0371	0.0013
00007	A	5186	1.7491	938	2.0465	982	1.9055	0.2974	0.0884	0.1564	0.0244
00008	FOR	4854	1.6371	518	1.1301	592	1.1487	0.5070	0.2570	0.4884	0.2385
00009	WE	4273	1.4411	502	1.0952	790	1.5329	0.3459	0.1196	0.0918	0.0084
00010	YOUR	4169	1.4061	637	1.3898	410	0.7956	0.0163	0.0002	0.6105	0.3727
	SUM =	76863	25.9234	9944	21.6952	11643	22.5921	6.6760	7.8881	4.5053	3.8753
N=	10 SUM_GG=	3.4313	SIGMA_GG=	0.6174	V_GG=	0.3813	SUM_SW=	1.7728	SIGMA_SW=	0.4438	V_SW= 0.1970 T= 0.8694
00011	BE	3771	1.2718	412	0.8989	616	1.1953	0.3729	0.1390	0.0765	0.0058
00012	IS	3750	1.2648	533	1.1629	644	1.2496	0.1019	0.0103	0.0152	0.0002
00013	THIS	3590	1.2108	292	0.6371	297	0.5763	0.5737	0.3291	0.6345	0.4025
00014	THAT	3548	1.1966	750	1.6363	641	1.2438	0.4397	0.1933	0.0472	0.0022
00015	WILL	3182	1.0732	676	1.4749	625	1.2127	0.4017	0.1613	0.1395	0.0194
00016	ON	2819	0.9508	368	0.8029	312	0.6054	0.1479	0.0218	0.3454	0.1193
00017	OUR	2615	0.8820	526	1.1476	473	0.9178	0.2656	0.0705	0.0358	0.0012
00018	AS	2566	0.8654	263	0.5738	329	0.6384	0.2916	0.0850	0.2270	0.0515
00019	ARE	2515	0.8482	265	0.5782	466	0.9042	0.2700	0.0728	0.0560	0.0031
00020	HAVE	2430	0.8196	507	1.1061	557	1.0808	0.2865	0.0820	0.2612	0.0682
00021	WITH	2314	0.7804	248	0.5411	284	0.5511	0.2393	0.0572	0.2293	0.0525
00022	IT	2086	0.7035	457	0.9971	414	0.8033	0.2936	0.0862	0.0998	0.0099
00023	I	1865	0.6290	679	1.4814	505	0.9799	0.8524	0.7265	0.3509	0.1231
00024	AT	1689	0.5696	251	0.5476	250	0.4851	0.0220	0.0004	0.0845	0.0071
00025	BY	1435	0.4840	140	0.3054	197	0.3823	0.1786	0.0318	0.1017	0.0103
00026	OR	1405	0.4739	105	0.2291	137	0.2658	0.2448	0.0599	0.2081	0.0433
00027	WHICH	1379	0.4651	84	0.1833	83	0.1611	0.2818	0.0794	0.3040	0.0924
00028	IF	1374	0.4634	230	0.5018	155	0.3008	0.0384	0.0014	0.1626	0.0264
00029	NOT	1369	0.4617	264	0.5760	276	0.5355	0.1143	0.0130	0.0738	0.0054
00030	WOULD	1229	0.4145	150	0.3273	228	0.4424	0.0872	0.0076	0.0279	0.0007
00031	FROM	1203	0.4057	114	0.2487	183	0.3551	0.1570	0.0246	0.0506	0.0025
00032	HAS	1101	0.3713	141	0.3076	174	0.3376	0.0637	0.0040	0.0337	0.0011
00033	AN	1055	0.3558	177	0.3862	183	0.3551	0.0304	0.0009	0.0007	0.0000
00034	US	1017	0.3430	226	0.4931	121	0.2348	0.1501	0.0225	0.1082	0.0117
00035	DEAR	990	0.3339	280	0.6109	80	0.1552	0.2770	0.0767	0.1787	0.0319
00036	ALL	981	0.3309	113	0.2465	118	0.2290	0.0844	0.0071	0.1019	0.0103
00037	ANY	953	0.3214	72	0.1571	86	0.1669	0.1643	0.0269	0.1545	0.0238
00038	MR	945	0.3187	337	0.7352	38	0.0737	0.4165	0.1734	0.2450	0.0600
00039	YOURS	931	0.3140	283	0.6174	54	0.1048	0.3034	0.0920	0.2092	0.0437
00040	CAN	917	0.3093	213	0.4647	257	0.4987	0.1554	0.0241	0.1894	0.0358
00041	WAS	900	0.3035	100	0.2182	257	0.4987	0.0853	0.0072	0.1952	0.0381

SAMPLE COMPUTER PRINTOUT FOR ABSOLUTE PERCENTAGE DEVIATION FROM ADJUSTED MELLINGER FREQUENCY
(continued)

RANK	WORD	MELL.FREQ.	% OF MELL.	FREQ.(GG)	% TOT(GG)	FREQ.(SW)	% TOT(SW)	% DEV.(GG)		% DEV.(SW)	
00042	PLEASE	874	0.2948	95	0.2073	40	0.0776	0.0875	0.0076	0.2172	0.0471
00043	BEEN	852	0.2874	129	0.2814	248	0.4812	0.0060	0.0000	0.1938	0.0375
00044	THESE	795	0.2681	80	0.1745	95	0.1843	0.0936	0.0087	0.0838	0.0070
00045	VERY	765	0.2580	129	0.2814	51	0.0990	0.0234	0.0005	0.1590	0.0252
00046	ONE	774	0.2610	135	0.2945	143	0.2775	0.0335	0.0011	0.0165	0.0002
00047	TIME	769	0.2594	88	0.1920	79	0.1533	0.0674	0.0045	0.1061	0.0112
00048	NEW	709	0.2391	76	0.1658	111	0.2154	0.0733	0.0053	0.0237	0.0005
00049	DO	689	0.2324	154	0.3360	130	0.2523	0.1036	0.0107	0.0199	0.0003
00050	SINCERELY	664	0.2239	166	0.3622	35	0.0679	0.1383	0.0191	0.1560	0.0243
	SUM =	141678	47.7833	20252	44.1847	21615	41.9418	14.6940	10.6356	10.5093	5.3339
N=	50 SUM_GG=	6.3173	SIGMA_GG=	0.3590	V_GG=	0.1289	SUM_SW=	3.1250	SIGMA_SW=	0.2525	V_SW= 0.0638 T= 1.3481
00051	MAY	642	0.2165	131	0.2858	84	0.1630	0.0693	0.0048	0.0535	0.0028
00052	SHOULD	640	0.2159	53	0.1265	136	0.2639	0.0894	0.0079	0.0480	0.0023
00053	LETTER	604	0.2037	55	0.1200	59	0.1145	0.0837	0.0070	0.0892	0.0079
00054	INFORMATION	597	0.2013	23	0.0502	46	0.0893	0.1511	0.0228	0.1120	0.0125
00055	THEY	591	0.1993	134	0.2924	151	0.2930	0.0931	0.0086	0.0937	0.0087
00056	TRULY	576	0.1943	80	0.1745	28	0.0543	0.0198	0.0003	0.1400	0.0195
00057	OTHER	539	0.1818	58	0.1265	62	0.1203	0.0553	0.0030	0.0615	0.0037
00058	THERE	537	0.1811	71	0.1549	118	0.2290	0.0262	0.0006	0.0479	0.0022
00059	NO	532	0.1794	74	0.1614	80	0.1552	0.0180	0.0003	0.0242	0.0005
00060	MORE	518	0.1747	101	0.2204	101	0.1960	0.0457	0.0020	0.0213	0.0004
00061	SO	520	0.1754	73	0.1593	74	0.1436	0.0161	0.0002	0.0318	0.0010
00062	BUT	514	0.1734	115	0.2509	56	0.1087	0.0775	0.0060	0.0647	0.0041
00063	WHEN	506	0.1707	123	0.2684	96	0.1863	0.0977	0.0095	0.0156	0.0002
00064	COMPANY	503	0.1696	70	0.1527	37	0.0718	0.0169	0.0002	0.0978	0.0095
00065	KNOW	502	0.1693	124	0.2705	100	0.1940	0.1012	0.0102	0.0247	0.0006
00066	ALSO	496	0.1673	19	0.0415	39	0.0757	0.1258	0.0158	0.0916	0.0083
00067	SERVICE	478	0.1612	68	0.1484	49	0.0951	0.0128	0.0001	0.0661	0.0043
00068	ENCLOSED	470	0.1585	94	0.2051	31	0.0602	0.0466	0.0021	0.0983	0.0096
00069	SOME	469	0.1582	57	0.1244	93	0.1805	0.0338	0.0011	0.0223	0.0004
00070	ME	450	0.1518	167	0.3644	44	0.0854	0.2126	0.0451	0.0664	0.0044
00071	WERE	449	0.1514	47	0.1025	108	0.2096	0.0489	0.0023	0.0582	0.0033
00072	ORDER	443	0.1494	47	0.1025	62	0.1203	0.0469	0.0021	0.0291	0.0008
00073	EACH	440	0.1484	44	0.0960	81	0.1572	0.0524	0.0027	0.0088	0.0000
00074	POLICY	438	0.1477	23	0.0502	13	0.0252	0.0975	0.0095	0.1225	0.0150
00075	ABOUT	436	0.1470	88	0.1920	121	0.2348	0.0450	0.0020	0.0878	0.0077
00076	PROGRAM	430	0.1450	12	0.0262	47	0.0912	0.1188	0.0141	0.0538	0.0028
00077	YEAR	489	0.1649	56	0.1222	57	0.1106	0.0427	0.0018	0.0543	0.0029
00078	THANK	422	0.1423	36	0.0785	41	0.0796	0.0638	0.0040	0.0627	0.0039
00079	OFFICE	421	0.1420	63	0.1374	65	0.1261	0.0046	0.0000	0.0159	0.0002
00080	HE	419	0.1413	227	0.4953	336	0.6520	0.3540	0.1253	0.5107	0.2608
00081	NOW	403	0.1359	40	0.0873	42	0.0815	0.0486	0.0023	0.0544	0.0029
00082	THEIR	402	0.1356	57	0.1244	86	0.1669	0.0112	0.0001	0.0313	0.0009
00083	ONLY	388	0.1309	55	0.1200	39	0.0757	0.0109	0.0001	0.0552	0.0030
00084	THEM	387	0.1305	96	0.2094	71	0.1378	0.0789	0.0062	0.0073	0.0000

VITA

Bonnie Roe White was born in Riverton, Nebraska. She graduated from Hastings Senior High School in Hastings, Nebraska. After high school she attended Evangel College in Springfield, Missouri, and received a Bachelor of Arts degree in 1962 with a major in psychology.

From 1962-1964 she was employed as secretary and statistical researcher in Omaha, Nebraska, and attended the University of Nebraska at Omaha part time. From 1964-1966 she was the executive secretary of the chemistry department at Florida State University. In 1966 she was awarded a university fellowship and in 1967 graduated with a M.S. in adult education from Florida State University. The following year she was employed with a psychology laboratory and participated in two major research projects.

From 1968-1970 she was the senior executive secretary to the vice chancellor of finance at the University of Pittsburgh. While in Pittsburgh, she attended the University of Pittsburgh part time and taught in the Allegheny Community College night program. From 1970-1972 she lived in Richmond, Kentucky. She received a teaching assistantship in business education at Eastern Kentucky University and graduated with a M.S. in education in 1972.

In September, 1972, she enrolled in the doctoral program at the University of Tennessee and was a graduate teaching assistant in office administration. Upon completion of her course work, she was employed with the Occupational Research and Development Unit at Auburn University. In December, 1975, she joined the instructional staff and is currently

a faculty member of the Vocational and Adult Education Department of Auburn University. She received the Doctor of Education degree in August, 1979.

She is a member of the American Vocational Association, National Business Education Association, Alabama Business Education Association, National Collegiate Association of Secretaries, Delta Pi Epsilon, and the Special Interest Group in Business Education of the American Educational Research Association.

She is married to Charles R. White of the industrial engineering faculty at Auburn University. She has two children, Brendan and Wendy.