A COMPARISON OF THE WRITING STYLES OF EXPERIENCED AND NOVICE JOURNALISTS

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PREFACE

A comparison of writing styles of 152 experienced journalists and 60 novice writers indicated professional reporters tend to use longer words, longer sentences, and more complex sentence structure. Comparisons among writing styles of four individual newspaper groups and the novice group identified 10 significant variables and indicated novice style is less comprehensible and cohesive. Newspaper styles differed along the stylistic dimension of creativeness and complexity.

This study seems to be the first comparing writing styles of professional and student journalists using computer-generated measurements of stylistic variables. The technique seems promising, and further research to refine the process is encouraged.

I express gratitude to the dedicated faculty who expanded my vision and made my studies at Oklahoma State University exciting. I owe special thanks to Dr. Walter J. Ward, my major adviser, for his ability to fan sparks into flames.

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CHAPTER I

INTRODUCTION

Background and Overview

Journalism educators and newspaper editors who work with inexperienced reporters usually teach them a writing style common among, and peculiar to, journalists. This style grew out of a need to present information efficiently to the hurried, diverse audience of newspaper readers and to serve certain production needs of editors and headline writers.

The structure of the ordinary newspaper story is based on the "inverted pyramid" model. Important information, and the bulk of the story's value is in the top, with the importance of the information decreasing as the story continues. The first paragraph or two summarizes the story. This allows readers to sample the story by reading the headline and first few sentences and to read further, if interested, or to skip to another story. This structure also allows an editor to cut a story from the bottom to fit available space without losing essential content. It also lets the headline writer compose a headline summarizing the story from the opening paragraphs.

Instructors and editors also lecture young reporters

about other structural elements of writing. They want appropriate word, sentence, and paragraph length. They insist on variety in sentence patterns to avoid monotony. They prefer active to passive verbs. Editors usually want the concrete rather than the abstract. They counsel against overuse of certain sentence beginnings and advise general avoidance of adjectives and adverbs.

Seldom do novice reporters ask a professor or an editor giving such advice "How long," or "How often," or "When." When a neophyte does ask, the answers are based on unique, personal internalized rules, rather than on a set of external guidelines. Journalistic style, although often described in news writing and reporting textbooks, most often is presented in collections of examples.

Educators and editors must rely largely on their instincts and experiences to describe how long, how often, and when, as well as to estimate the effectiveness of the many other aspects of the writing product and process. Those they teach must absorb their own version of "the rules" from dozens, or hundreds, or thousands of individual examples of writing. This process is imprecise, and its effectiveness is limited by the student's ability to generalize from the examples.

Because writing is a craft that can be an art, and because it is an expression of the individual writer, complete standardization would not be desirable even if it were possible. Writing that communicates effectively is

desirable. Some keys to understanding what makes one piece of writing effective and another ineffective lie in the writing itself. New tools are just becoming available to measure some elements of writing style and, perhaps, identify some of those keys.

The Problem

Journalism teachers and editors know that the writing of experienced reporters differs from that of beginners. Those who teach news writing in the classroom know the common mistakes novice writers make. One objective of such teaching is to help the beginner make his or her writing more like that of the experienced writer. Describing and measuring some of the journalistic style variables allows at least some facets to be quantified. This, in turn, allows a comparison of the writing styles of experts and novices, at least in terms of measurable variables.

Knowing which differences are significant can lead to the development of new tools for diagnosing writing deficiencies and correcting them. Such tools might help teachers identify more precisely the problems that exist and what exercises ought to be prescribed to remedy them.

Advances in computer technology have, in the past five years, provided tools that quickly measure some stylistic features of writing. Some of these measurements previously were not used because of the overwhelming amount of time it took to calculate them by hand. One such computerized

tool is a set of programs called "Writer's Workbench" (WWB) (Cherry, 1982). WWB was developed in the early 1980's by Bell Laboratories to help improve the writing of Bell employees. WWB makes no changes in a piece of writing, but it points to where improvements possible might be made, and, in some cases, suggest alternatives.

This writer proposes to use two of the more than 30 programs in the WWB package in an attempt to identify variables of structural writing style that discriminate between novice and experienced news writers.

One WWB program called "STYLE" was designed primarily to quantify stylistic variables in a piece of writing and calculate readability scores, indicators of reading difficulty. "STYLE" measures 28 structural features. Another WWB program called "ABSTRACT" scans a piece of writing for 314 words that psychological research has shown to be abstract and calculates the percentage of abstract words. It suggests replacing some abstract words or using more concrete examples if the percentage is higher than 2.3 percent, the mean percentage of abstract words in a set of technical documents which Bell research judged to be "good."

If the 29 variables measured by the "STYLE" and "ABSTRACT" programs can be shown to discriminate between the writing of experienced or novice journalists, a number of benefits could be gained. Techniques used in this study could be adapted to identify style differences in other fields. Clearer descriptions of a range of writing styles

and the specific differences between them would benefit composition theorists as well as journalists. Also, knowing the stylistic techniques of the experienced writer could help educators develop diagnostic and teaching tools focusing more sharply on skills separating experienced writers from beginners.

Stylistic analysis research could also move ahead more quickly if important stylistic indexes could be measured by computer. Variables associated with some indexes found in the literature must now be hand computed by persons with considerable expertise. Writer's Workbench and other similar programs offer possible easy access to stylistic measurements that could move research forward significantly.

The present research addresses these questions:

Which stylistic variables measured by "Writer's Workbench" programs discriminate between the writing of experienced and novice journalists?

What are the specific significant differences in the structural writing styles of experienced and novice journalists?

How much of the variance between the writing styles of experienced news reporters and novices can be accounted for by the variables measured by "Writer's Workbench" programs?

The null hypothesis is that no significant differences exist between the writing styles of experienced and novice journalists in terms of the variables measured by "Writer's Workbench."

Scope of the Study

As stated earlier, variables measured by the "STYLE" and "ABSTRACT" programs in Bell Laboratories' "Writer's Workbench" were used in the study, i.e., 29 variable categories listed and defined in the following section.

These variables represent surface structural features of the news stories analyzed. Structural features are those having to do with the form of writing, as opposed to its content. The computer program is unable to quantify content features. Variables to be examined give no indication of whether the writing is appropriate, interesting, or whether it even makes sense, because these qualities lie in the content.

This inability also means that although the study compared the writing styles of skilled and unskilled writers, the results were descriptive rather than qualitative. The data were expected to reveal variables that separated expert from novice. An interesting question that could be raised is, "Can the measured variables predict whether the writing would be judged 'good' or 'bad'." Considerable text analysis research is being done on content. Some efforts have attempted to measure such aspects of writing as cohesion, roles of sentences, management of abstraction levels, and thematic structure (Cooper, 1983). Such content analysis might attempt a description of good or bad. Some limited inference of quality may be possible in the present study from the results of the multivariate analysis. However, the interpretation of

data was primarily descriptive, not evaluative.

Newspaper editors strive to present their news attractively through the use of typographical devices. Well-edited newspapers use legible type for reading ease, contrasting type and white space, plus appropriate illustrations, to attract attention and maintain interest. These factors relate to a newspaper story's readability. Data collected in the research did not take into account the context and typographic presentation of the news stories being analyzed.

Computer analysis imposes another constraint. Although WWB can measure a given story in seconds, the story must be entered into the computer before it can be analyzed. Because getting the text into the computer is expensive and time-consuming and the analysis and storage of the stories involve computer costs, the suze of the writing sample used in the study was limited by financial and time constraints. It would be desirable to use a large and diversified sample, and in future research, additional stories should be added to the pool of text. This study sampled national, regional, and local writing by experienced journalists and student writing from one university. The sample also was large enough to meet the minimum requirements for the types of analysis used.

Definition of Variables

The 29 variables measured by WWB's "STYLE" and "ABSTRACT" programs represent four kinds of information:

(1) sentence length and type, (2) word usage, (3) sentence beginnings, and (4) readability scores. These groups and the variables in them were included by WWB authors because they relate to some recognized principle of effective writing (Cherry, 1982). Measurements of word and sentence length also are used to calculate a readability score, reported by the "STYLE" program, for each piece of writing analyzed. This section describes and defines the stylistic variables used in the study. The variables are numbered 1-29 under the group headings that follow:

Sentence Length and Type

The following sentence features are measured:

1. Average Sentence Length

Percentage of:

2. Simple Sentences
3. Complex Sentences
4. Compound Sentences
5. Compound-Complex Sentences
6. Passive Sentences
7. Shorter Sentences (5 words or more shorter than mean)
8. Long Sentences (10 words or more longer than mean)

The "STYLE" program treats as a sentence any sequence of words ending with a period, question mark or exclamation point. It can recognize enough structural features to classify sentence types (simple, complex, compound, etc.). Sentence types are defined slightly differently in the "STYLE"

computer program than in some standard textbooks. A simple sentence has one verb and no dependent clause. A complex sentence has one independent clause and one dependent clause, each with one verb.

Complex sentences contain either a subordinate conjunction or a clause beginning with a word such as "that" or "who." A compound sentence has more than one verb and no dependent clause or consists of two sentences joined by a semicolon. A compound-complex sentence has either several independent clauses or one dependent clause and a compound verb in either the dependent or independent clause (Cherry, 1982, p. 102).

Most books on effective writing stress the need for variety in sentence length and structure. Sentence-length and sentence-type measurements reported by "STYLE" allow a writer to see his range of sentence lengths, the average, and the percentage of sentences that are especially short or long.

Word Usage

The following features of word usage are measured:

9. Average Word Length
10. Percentage of Content Words (nouns, adjectives, adverbs, nonauxiliary verbs)
11. Average Length of Content Words

Percentage of:

12. To Be Verbs (variations of "is")

13. Auxiliary Verbs
14. Infinitives
15. Prepositions
16. Conjunctions
17. Adverbs
18. Nominalizations (verbs changed to nouns)
19. Adjectives
20. Pronouns
21. Nouns
22. Abstract Words

The "STYLE" program treats as a word any sequence of characters separated from others by a space or punctuation. A separate WWB program called "PARTS" runs in conjunction with "STYLE" to classify words as one of the parts of speech. "PARTS" uses a built-in directory to identify suffixes and to classify most words. Those words the program cannot classify in this way are scanned in context by a sophisticated algorithm that examines possible categories and eliminates erroneous ones until it arrives at a "best" classification. Tests of "PARTS" show it to be about 95 percent accurate in correctly classifying parts of speech (Cherry, 1982, p. 101).

"STYLE" reports percentages of parts of speech to allow analysis of how well their functions are performed in the writing. For example, pronouns refer back to antecedents and relate the two positions in the writing, adding connectivity and cohesiveness. A ratio of nouns to modifiers gives an estimate whether modifiers may be overused. Conjunctions

build parallelism into the writing, and, along with adverbs make transitions when used as sentence beginnings. In this role, they also contribute cohesiveness. WWB authors included various word usage measurements because each has been shown or is believed to have some impact on writing effectiveness.

Authors of "STYLE" make a distinction between "content words" and "function words." Prepositions, conjunctions, articles, and auxiliary verbs are classified as "function words." These tend to be short and, thus, lower the average word length. The average length of non-function or "content words" was considered to be a more useful measure of a writer's word choice than the total average word length.

"To be" verbs are variations of "is," for example, "are," "was," and "were." Passive sentences use "to be" verbs. Overuse of passive constructions is a generally recognized writing fault. A high percentage of "to be" verbs, whether in passive sentences or in other sentence types, is symptomatic of lifeless writing weighted down with "being" rather than "action" verbs.

Nominalizations, verbs changed to nouns by adding "ment," "tion," "ence," or "ance," make sentences lomger and less direct. "STYLE" reports the percentage of nominalizations to let a writer see how frequently he or she uses them.

The percentage of abstract words is measured by separate programs, "ABSTRACT," and was included along with the "STYLE" variables as a potential feature which might be able to

separate experienced and novice journalists. As mentioned above, a high percentage of abstract words may mean the writer needs to include more concrete examples to help the reader grasp the meaning.

Sentence Beginnings

"STYLE" measures the percentage of sentence beginnings that are:

23. Verbs
24. Conjunctions
25. Prepositions
26. Adverbs
27. Subordinate Conjunctions
28. Expletives ("it" and "there," usually with "to be")

Writing experts generally agree that effective writing is characterized by variety in sentence beginnings. For example, guides to effective writing generally advise that overuse of articles as sentence openers creates monotony. By looking at the percentages of sentence beginnings reported by "STYLE," a writer can judge the diversity of the opening words of his or her sentences. These percentages also offer clues about other functions of sentence openings. For example, adverbs and conjunctions at the beginning of sentences contribute transition and cohesiveness.

"Expletives" are sentence beginnings involving "it" or "there," often with a "to be" verb. Some writers overwork "there are," "it is," and similar sentence beginnings. They

weaken the writing, because they can be almost always eliminated, making the sentence more active, shorter, and clearer. The "STYLE" report on expletives allows the writer to identify overuse of this sentence beginning.

Readability Scores

Readability scores, expressed as school grade levels, are reported for each piece of writing analyzed by "STYLE." Four different readability scores are reported: Flesch, Kincaid, Automated Readability Index (Auto), and Coleman-Liau. Only the two that proved significant in the discriminant analysis, Auto and Coleman-Liau, will be included in tables that follow. Scores are calculated in the following ways:

29. Reading Grade

Auto = 4.71 X letters per word + 0.5 X words per sentence.

Coleman-Liau = 5.89 X letters per word - 0.3 X sentences per 100 words - 15.8.

Flesch = 206.835 - 84.6 X syllables per word - 1.015 X words per sentence.

Kincaid = 11.8 X syllables per word + 0.39 X words per sentence - 15.59.

ENDNOTES

Cherry, L., "Writing Tools," IEEE Transactions on Communications, COM-30, 1:100-105 (1982)

Cooper, C.R., "Procedures for Describing Written Texts" in Research on Writing, P. Mosenthal, L. Tamor and S.A. Walmsley, eds., New York: Longman, 1983.

CHAPTER II

RELATED RESEARCH

Stylistic analysis is a kind of message research. Messages in a communication system are made up of the symbols that convey denotative and connotative meanings shared in the communication process. Message research has focused on two methodologies in particular, content analysis and stylistic analysis.

Content analysis measures the "what" or semantic dimension, and stylistic analysis measures the syntactic or "how" aspect of messages (Lynch, 1970a, p. 315). Content analysts select indicators of the message dimension being measured, count their frequency in sample messages, and use the results to make inferences about the intent of the communicator and/or the effectiveness of the message. Stylistic analysts measure variables such as sentence length, word length, and percentage of parts of speech. They use their observations to predict audience reaction and/or to compare individual writing styles.

Because this study analyzes stylistic variables measured by a computer program, it is restricted to the structural features of the writing. Writer's Workbench "STYLE" and "ABSTRACT" programs cannot measure or analyze content

features. Although many studies dealing with content analysis in the literature were found and read, only the findings of stylistic studies are discussed in this chapter.

Such studies have been conducted by those seeking to understand and teach literary styles as well as researchers in journalism and communication. Literary studies have attempted to increase effectiveness of composition and reading instruction. Stylistic literary research also has produced descriptive studies of the styles of various authors and has attempted to identify authorship of various authors on the basis of style. Stylistic analysis in composition/reading have been spurred during the past decade by the discourse analysis movement and efforts with that discipline to understand the creation and comprehension of writing.

With journalism and communication, basic research efforts in stylistic analysis have sought to identify and define dimensions of news and style. Nafziger, MacLean, and Engstrom (1951) pioneered the application of factor analysis to readership studies. Ward (see 1973 and later studies) and others used Q methodology to identify and name news value dimensions. Similar efforts aimed directly as stylistic analysis have produced four widely used dimensions of style and more than a dozen indexes that correlate with them.

Message analysis in journalism and communication has focused largely on efforts to infer from style variables the author's intent or to predict the reader's reaction. Techniques for inferring intent grew out of efforts to measure

propaganda and sensationalism. Some research aimed at predicting reader reaction has been marketing-related, such as measuring readability or readership; other studies have probed underlying variables for the dimensions of concepts such as comprehension and human interest.

Literary and Composition Research

Literary research most directly related to this project grew out of efforts to determine authorship on the basis of stylistic variables. Mosteller and Wallace (1963) found that the Federalist Papers written by Hamilton could be discriminated from those written by Madison on the basis of frequency of words such as "by," "to," and "upon."

O'Donnell (1966) later used 18 structural, word usage, and literary technique variables to determine which parts of the novel The O'Ruddy were written by Stephen Crane. By measuring 18 stylistic variables, then using discriminant analysis, O'Donnell identified the chapters Crane wrote before his death and those written by Robert Barr, who completed the novel and published it three years after Crane died.

These studies build on less-directly related similar literary text-analysis research. Yule's (1944) pioneering studies of noun frequencies in religious works were conducted before computer assistance was available. It preceded many years later works such as Whaler's (1956) attempt to quantify Milton's rhythm in Paradise Lost. Lynch (1970) cites indications that content analysis has roots leading

back to studies of the McGuffy Readers as early as 1840 and to Talmudists who used frequency counts to distinguish usual from unusual meanings in 900 A.D.

Another important literary study is Gray's and Leary's (1935) analysis of the variables that make reading difficult or easy. They devised what many regard as the first readability formula. This work provided a starting point from which Flesch, Gunning and other scholars of readability and effective writing blazed trails.

In the past 15 years, another literary group, the proponents of discourse analysis, have produced a number of studies comparing professional writing styles to textbook standards and to the styles of novice writers. Meade and Ellis (1970) compared photographs in modern literary writing to paragraph styles recommended by high school composition textbooks of the 1960's. They found that 56 percent of the paragraphs in their sample could not be classified under paragraph styles recommended in the textbooks. Braddock (1974), in a later study, found that 13 percent of the paragraphs written by professional writers sampled began with a topic sentence, and nearly half had no topic sentence.

Winterowd (1970), Halliday and Hasan (1976), and others developed stylistic analysis theories that attempt to account for cohesion in writing. Out of this work have come studies comparing the styles of experienced writers and novices by measuring constructs such as reference, substitution, conjunction, ellipsis, and lexical ties (for example, use of

the definite article "the" and personal pronouns). Rochester and Martin (1979) used cohesive variables to compare speech patterns of adult schizophrenics and normal speakers. They found that schizophrenics used fewer cohesive ties and different kinds of cohesive ties than the normal speakers.

Witte and Faigley (1981) compared high- and low-rated freshman English essays on the basis of cohesive ties. They found that writers of high-rated essays used a larger number (one every 3.2 vs. one every 4.9 words) and a more diverse range of cohesive ties.

Other studies that measure cohesive features to describe differences between the styles of experienced and novice writers are discussed by Cooper (1983). One of these is analysis of the writer's ability to manage relationships between information already known and new information as it is introduced in the writing. One skill in relating new to old is effective use of the parts of speech that coordinate with and refer back to ideas already presented. Another potentially useful methodology is to correlate the abstraction levels of sentences with the roles they play in the writing. General statements are more abstract than examples that support them. Matsuhashi (1981) used abstraction-level analysis to compare typical and superior high school writing.

Cooper (1983) also discusses the potential value of Winterowd's proposal that sentences serve functions in a piece of writing similar to those served by parts of speech on the sentence level. Winterowd described seven roles that

sentences might play along with words (and one punctuation mark) that play those same roles: (1) coordination (and), (2) obversativity (but), (3) causativity (for), (4) conclusivity (so), (5) alternativity (or), (6) inclusivity (the colon), and (7) sequence (first, second, third). Cooper and Matsuhashi adapted related works by Larson (1967) and Labov (1972) to identify five categories of sentence roles. These are: (1) generalizing (stating/restating), (2) rhetorical (summarizing, concluding), (3) sequencing (adding, replacing, narrating), (4) relating (contrasting, comparing, implying, evaluating, expressing cause, qualifying), and (7) developing (exemplifying, defining, describing).

An early study by Fisk (1933) compared journalistic and literary styles by measuring such variables as sentence length, sentence types, modifier type and frequency, and use of simile and metaphor. She analyzed samples from the front pages of 13 newspapers from around the nation and 13 contemporary books selected by the Literary Guild in 1931-32. Means were reported in the study, but no statistical analyses were conducted to determine significance between means. The study found that newspaper sentences were longer than those in books (23.70 words compared to 20.83), newspapers contained a higher percentage of simple and complex sentences (simple = 42.17 percent compared to 31.91 percent, complex = 48.72 percent compared to 36.82 percent), journalistic writing used adjectives more frequently (no percentages reported), and newspaper writing contained two-thirds

the number of similes and metaphors found in books.

Journalism and Communication Research

Relevant research within journalism and communication has sought to identify clusters of stylistic variables in news writing that would predict reader reaction. Some of these were descriptive readability studies that examined stylistic variables, usually word and sentence length, to estimate how comprehensive writing is. Other analytical studies used factor and multiple regression analysis to identify and describe underlying dimensions of style that affect reader judgments. The following sections describe major studies of both types.

Readability Studies

Readability research has produced decriptive studies that compare the reading difficulty of writing samples with measures of reading comprehension. The various readability formulas correlate some stylistic variables, usually word and sentence length, with standardized comprehension measures. Recent analytical research identifies readability as only one of several indexes within a stylistic dimension generally called "Comprehension." Other variables with which readability tends to cluster are percentage of function or content words (usually called "redundancy"), word length ("complexity"), and sentence length.

Interest in readability research is associated with

early efforts to measure comprehension and recall. Tests of comprehension were devised and studies conducted by authors such as Thorndike (1915), Haggerty (1917), Monroe (1918), C.R. Stone (1922), McCall (1922), McCall and Crabbs (1926), and Courtis (1925) (cited in Lynch, 1970, p. 320).

The McCall-Crabbs Standard Test Lessons in Reading became widely accepted and used.

Later tests expanded and refined these early approaches and led to the development of standard recall measures. These measures provided an index of clarity or ease of understanding. Recall measurements were used to identify an average level of comprehension for sample passages. Various stylistic variables were studied and used to predict comprehension scores. Readability formulas for measuring comprehension were developed by researchers such as Gray and Leary (1935), Irving Lorge, who taught Flesch at Columbia, Flesch (1946), and Gunning (1952).

The work by Flesch, Gunning, and others in developing measures of the readability index already has been mentioned. Later studies used readability formulas to measure the reading difficulty of newspaper content. Moznette and Rarick (1968) compared the reading difficulty of news stories and editorials and found that editorials in the sample were easier to comprehend. They estimated that front-page news stories in their sample, taken from West Coast metropolitan newspapers, could be easily understood only by readers with a high school or college education.

Razik (1969) measured the readability of newspaper stories on various topics and found the most readable ones dealt with weather, tragedy, crime, local news, and features. More difficult to read were stories about the economy, international affairs, and state and national political happenings. He estimated that stories about national-international news and other page-one information was above the reading level of half the newspaper audience.

Hoskins (1973) examined Associated Press and United Press International stories and concluded that wire service stories generally require high-school-level reading ability. He found 83 percent of the UPI stories near the "very difficult" end of Flesch's Reading Ease Scale. Bittner and Shamo (1976) concluded that the widely used newspaper minipage, aimed at young readers, is difficult for readers having less than fifth-grade reading ability.

Porter (1982) conducted a readability study of the Worchester, Mass., Telegram that produced similar results. Straight news stories generally require high school-level reading ability, while softer news, sports news and features scored lower in reading difficulty. The cumulative impact of readability studies indicate that page-one news writing taxes the ability of those not reading at the high school or college level.

Stylistic Studies

Some authors went beyond the descriptive readability

studies to factor out dimensions of writing style and identify variables associated with them. Lynch, who did some of his early work with Tannenbaum, has been most prolific in stylistic analysis studies. A chapter which he wrote for a book on research methods catalogs the extensive work that has led to widespread acceptance of the existence of four stylistic dimensions, which Lynch calls: (1) Comprehension, (2) Sensationalism, (3) Creativeness, and (4) Human Interest. He also describes 12 stylistic indexes (Lynch, 1970).

The four stylistic dimensions will be capitalized in this study to remind the reader that these words describe complex constructs that should not be confused with the words as they are commonly used. Differences between the common use of the terms and the construct label they represent are explained in Chapter V.

Lynch's labels will be used in this study, but this author will define the indexes in terms that let the reader relate most of them to the Writer's Workbench variables. Some style indexes are not measured by WWB, for example, punctuation within sentences. Other indexes are not calculated, such as the ratio of modifiers to nouns plus verbs. Still other indexes are indirect measures of WWB variables. The index called "redundancy" is a ratio of function words (articles, prepositions, and conjunctions) per sentence. WWB measures the ratio of nonfunction words in the writing, which is reported as percentage of content words.

In the list that follows, common index terms are given

followed in parentheses by an indication of the corresponding WWB variable or definition. Indexes not measured by WWB are marked with an asterisk. The four dimensions and the 12 indexes correlate in the following way:

Comprehension

- Readability (WWB = readability scores)
- Redundancy (percentage function word, WWB = percentage content words)
- Sentence Length (WWB = average sentence length)
- Complexity (average syllables/characters per word, WWB = average word length)

Sensationalism

- Pausality* (ratio of internal punctuation to sentences)
- Emotiveness* (ratio of modifiers to nouns plus verbs)

Creativeness

- Productivity (WWB = word and story length)
- Syntactic Dispersion* (variance in parts of speech used)
- Consistency* (characters per sentence, syllables per sentence, function words per sentence, and characters per word)
- Abstraction (WWB = percentage abstract words)
- Complexity (average syllables/characters per word, WWB = average word length)
- Pausality* (ratio of internal punctuation to sentences)

Human Interest

- Complexity (average syllables/characters per word, WWB = average word length)

Emotiveness (ratio of modifiers to nouns plus verbs)

Lexical Diversity* (total number of words divided by the number of different words)

Personalism* (percentage of personal words, as measured by the Flesch human interest score)

Research related to Comprehension has been discussed above in connection with readability studies. The following sections summarize research related to the stylistic dimensions of Sensationalism, Creativeness, and Human Interest.

Sensationalism. Basic research in identifying the stylistic dimensions of Sensationalism was done by Tannenbaum and Lynch (1960). They used semantic differential and factor analysis methodologies to measure aspects of sensational news and create what they called "Sendex," an index of Sensationalism. They expanded on their initial report in an article published two years later (Tannenbaum and Lynch, 1962). They had subjects rate the concept "Sensational News" on 10 adjective-pair scales. They then had the same subjects rate selected news stories on those same scales. Sendex uses D-square (generalized distance function) technique to measure the similarity between the concept "Sensational News" and the ratings of the news stories.

Tannenbaum and Lynch identified evaluative, excitement, and activity factors that collectively accounted for nearly 60 percent of the total variance in the rating scores. The evaluative factor was measured on the scales accurate-inaccurate, good-bad, responsible-irresponsible, wise-

foolish, acceptable-unacceptable. The excitement factor was measured by the scales colorful-colorless, interesting-uninteresting, exciting-unexciting, and hot-cold. The activity factor was measured on the scales active-passive, agitated-calm, and bold-timid.

Creativeness. Q methodology was used by Lynch and Bowman (1967) and Lynch and Collier (1970) to study the stylistic dimension identified as Creativeness. Subjects with a variety of creative aptitudes, as measured by the Remote Associates Test (Mednick, et al., 1964), sorted writing samples into piles representing least to most creative. Q methodology forces sorted items into a normal distribution. Scores assigned to the sorted writing samples were analyzed using correlation and factor analysis to reveal the dimensions of Creative judgments.

Stylistic indexes associated with Creativeness were productivity (frequency of words or sentences), consistency (characters per sentence, syllables per sentence, function words per sentence, and characters per word), syntactic dispersion (measures of variance in strings of three, four, and five parts of speech), abstraction (ratio of abstract to total nouns and finite to total verbs), complexity (ratio of syllables of hundred words and characters to words), pausality (ratio of internal punctuation to sentences).

Human Interest. Flesch (1960) developed an early index of the Human Interest aspect of comprehension. Flesch's method of calculating Human Interest depends on counting

"personal words" and determining the ratios of personal words to total words (pw) and personal words to total sentences (ps). His Human Interest (HI) formula is:

HI = 3.635 (pw) + .314 (ps)

Lynch, with Kent and Carlson (1967), and with Nettleship and Carlson (1968), used semantic differential and factor analysis methodologies to develop the Human Quotient Index (HQdex). Lynch's study identified four dimensions of Human Interest: personalism, evaluation, complexity, and constraint. Subjects rated the concept "Human Quality in a News Story" on 13 semantic differential adjective pairs. The same subjects rated news stories on the same scales. D-square methodology was used to calculate semantic differences between Human-Interest profiles of stories and the Human-Interest concept.

A later study by Kent (1966) had 45 subjects sort 45 news stories using Q methodology on a forced continuun from highest to lowest in Human Interest. Correlation and factor analysis were used to identify seven dimensions of Human Interest: novelty (unexpected vs. instructional), leisure (outdoor activity or travel vs. crime and death), complexity (simple vs. complex themes), personalism (emotional vs. detached approach), adversity (hardship vs. prosperity), achievement (self-help vs. nonimprovement), and orderliness (disorder vs. constancy in behavior).

Nettleship (1968) had 114 college students rate 36 of the news stories used by Kent on the HQdex scales. She also

measured 26 stylistic variables in the news stories and used multiple regression analysis to identify a smaller number of variables that accounted for 53 percent of the variance. Her results showed the most significant variables to be: (1) complexity (ratio of syllables per 100 words), (2) emotiveness (variance in modification per sentence), (3) lexical diversity (number of different words divided by total number of words), and (4) personalism (measured by the Flesch human interest formula).

Ruffner (1981) used stepwise multiple regression analysis on psychological, demographic, and stylistic variables to identify those that predict grades of students in a news-writing class. He used seven of Lynch's 12 indexes: productivity, sentence length, lexical diversity, redundancy, pausality, emotiveness, and readability. His study found that a combination of psychological, demographic, and stylistic variables accounted for 56 percent of the variance.

The most significant psychological variable was what Ruffner called "thinking introversion," as measured by scores on a standardized personality inventory test. Age was the significant demographic variable, with younger students performing better. Ruffner attributed this to the younger students' uninterrupted academic experience. Creativity and comprehensibility were the significant style dimensions. Significant writing-style variables were (1) lexical diversity (ratio of different words to total words), (2) percentage of content words, and (3) sentence length.

Burgoon, Burgoon and Wilkinson (1981) used eight of the stylistic variables in a study of newspaper readership, satisfaction, and image. In this study, supported by a grant from Gannett Co., Inc., 4,020 persons in four Gannett markets were interviewed by telephone and asked about their newspaper reading habits, satisfaction with their newspaper, and the newspaper's image.

Stylistic variables in sample stories from the newspaper or newspapers published in the respondent's city during the interview period were measured. The sample stories also were rated subjectively by semantic differential adjective pairs by college students. Results of the study supported the ideas that were later incorporated into "the USA Today style." Factor analysis of the data yielded a three-factor solution describing these dimensions: Stimulation-Color, Competence-Trust, and Ease of Reading.

Readers perceived the newspaper to be more competent and trustworthy when it used a simple vocabulary, little internal sentence punctuation, few adverbs and adjectives, and short, easy-to-read sentences. Metro section news was viewed as the most stimulating and most competent, while local columns were seen as least stimulating and least competent. The Stimulation-Color dimension was seen as the best predictor of frequency of readership, satisfaction, and positive image.

ENDNOTES

Bittner, J.R. and W.G. Shamo, "Readability of the 'Mini Page', " Journalism Quarterly, 53:740-743 (1976).

Braddock, R., "The Frequency and Placement of Topic Sentences in Expository Prose," Research in the Teaching of English, 8:287-302 (1974).

Burgoon, J.K., M. Burgoon, and M. Wilkinson, "Writing Style as Predictor of Newspaper Readership, Satisfaction and Image," Journalism Quarterly, 58:225-231 (1981).

Cooper, C.R., "Procedures for Describing Written Texts," in P. Mosenthal, L. Tamor, and S.A. Walmsley, Research on Writing: Principles and Methods, New York: Longman, pp. 287-313 (1983).

Fisk, M., "Comparing Journalistic and Literary English," Journalism Quarterly, 10:202-208 (1933).

Flesch, R., How to Write, Speak and Think More Effectively, New York: Harper and Brothers (1960)

Gray, W.S. and B.E. Leary, What Makes a Book Readable, Chicago: University of Chicago Press (1935).

Halliday, M.A.K. and R. Hasan, Cohesion in English, London: Longman (1976).

Hoskins, R.L., "A Readability Study of AP and UPI Wire Copy," Journalism Quarterly, 41:214-217 (1973).

Kent, B.D., Human Interest: Its Meaning and Measurement, unpublished Master's Thesis, University of Missouri, Columbia, 1966, cited in M.D. Lynch, H.M. Nettleship and R.P. Carlson, "The Measurement of Human Interest," Journalism Quarterly, 45:227 (1968).

Labov, W., Language in the Inner City: Studies in the Black English Vernacular, Philadelphia: University of Pennsylvania Press (1972).

Larson, R.L., "Sentences in Action: A Technique for Analyzing Paragraphs," College Composition and Communication, 18:16-22 (1967).

Lynch, M.D., "Stylistic Analysis," in P. Emmert and H. Brooks, eds., Methods of Research in Communication, Boston: Houghton Mifflin, pp. 315-342 (1970a).

Lynch, M.D. and D.L. Bowman, "A Correlate Measure of Creativeness," unpublished paper, University of Missouri, 1967, cited in P. Emmert and W. Brooks, eds., Methods of Research in Communication, Boston: Houghton Mifflin, p. 325 (1970b).

Lynch, M.D. and M.K. Collier, "The Meaning of Creativeness," unpublished paper, University of Missouri, 1966, cited in P. Emmert and W. Brooks, eds. Methods of Research in Communication, Boston: Houghton Mifflin, p. 325 (1970c).

Lynch, M.D., B.D. Kent, and R.P. Carlson, "The Meaning of Human Interest," Journalism Quarterly, 44:673-678 (1967).

Lynch, M.D., H.M. Nettleship, and R.P. Carlson, "The Measurement of Human Interest," Journalism Quarterly, 45: 226-234 (1968).

Matsuhashi, A., "Pausing and Planning: The Tempo of Written Discourse Production," Research in the Teaching of English, 15:113-134 (1981).

Meade, R.A., and W.G. Ellis, "Paragraph Development in the Modern Age of Rhetoric," English Journal, 59:219-226 (1970).

Mednick, M.T., S.A. Mednick, and C.C. Jung, "Continual Association as a Function of Level of Creativity and Type of Verbal Stimulus," Journal of Abnormal and Social Psychology, 69:84-88 (1964).

Moznette, J. and G. Rarick, "Which Are More Readable: Editorials or News Stories?", Journalism Quarterly, 45: 319:21 (1968).

Mosteller, F. and D.L. Wallace, "Inference in an Authorship Problem: A Comparative Study of Discrimination Methods Applied to the Authorship of The Federalist Papers," Journal of the American Statistical Association, 58:275-309 (1963).

Nafziger, R.O., M.MacLean, Jr., and W. Engstrom, "Useful Tools for Interpreting Newspaper Readership Data," Journalism Quarterly, 28:441-456 (1951).

Nettleship, H.H., Some Correlates of the HQdex, Master's Thesis, University of Missouri, Columbia, 1967, cited in M.D. Lynch, H.M. Nettleship, and R.P. Carlson, "The Measurement of Human Interest," Journalism Quarterly, 45:231 (1968).

O'Donnell, B., "Stephen Crane's The O'Ruddy: A Problem in Authorship Discrimination," in The Computer and Literary Style, Jacob Leed, ed., Kent, Ohio: Kent State University Press (1966).

Porter, W.C., Readability of News Stories in the Worchester Telegram, unpublished study (1982).

Razik, T.A., "A Study of American Newspaper Readability," Journal of Communication, 19:317-324 (1969).

Rochester, S.R. and J,R, Martin, Crazy Talk: A Study of the Discourse of Schizophrenic Speakers, New York: Plenum (1979).

Ruffner, M., "An Empirical Approach for the Assessment of Journalistic Writing," Journalism Quarterly, 58:77-82 (1981).

Tannenbaum, P.H. and M.D. Lynch, "Sensationalism: The Concept and Its Measurement," Journalism Quarterly, 37:381-391 (1960).

Tannenbaum, P.H. and M.D. Lynch, "Sensationalism: Some Objective Message Correlates," Journalism Quarterly, 39:317-323 (1962).

Ward, W.J., The Nature of News in Three Dimensions, School of Journalism and Broadcasting, Oklahoma State University, Stillwater, Oklahoma: Journalistic Services (1973).

Whaler, J, Counterpoint and Symbol: An Inquiry into the Rhythm of Milton's Epic Style, Copenhagen: Rosenkilde: 1956, cited in The Computer and Literary Style, Jacob Leed, ed., Kent, Ohio: Kent State University Press, p. 13 (1966).

Winterowd, W.R., "The Grammar of Coherence," College English, 21:828-835 (1970).

Witte, S.P. and L. Faigley, "Coherence, Cohesion, and Writing Quality," College Composition and Communication, 32:189-204 (1981).

Yule, G.U., The Statistical Study of Literary Vocabulary, Cambridge: Cambridge University Press (1944).

CHAPTER III

METHODOLOGY

To compare writing styles of experienced and novice journalists, an appropriate sample of stories from each group was selected. Local stories from dailt newspapers of national, regional, and local reputation were collected along with a small sample of national stories. Stories written by novice journalists came from members of university news writing classes. One of the statistical tools used, discriminant analysis, required a minimum sample larger than 200 subjects (Tucker, 1981, p. 197). A sufficient number of stories written by experienced writers and novices was collected to meet this criterion.

Stories by experienced journalists came from newspaper issues from May, June, and July, 1984. Three staff-written stories were selected from each of seven newspapers over a consecutive seven-day period. Twenty-one stories were included from each newspaper, except for one Utah newspaper from which 18 stories were collected. Consecutive issues of the newspapers were selected to provide representation of experienced staff members. An assumption was made that well-played local stories from seven consecutive issues of a given newspaper would more likely represent efforts of that

paper's experienced writers than would randomly selected stories or stories from randomly selected issues. Another nine stories written by the White House Press Corps, representatives of a highly experienced journalism group, also were included in the sample.

Newspaper stories were taken from the showcase page for local news. Some newspapers play their best local news stories on the front page; others display their best staff-written stories on page one of a local-news section. Two lead stories above the fold and one lead story below the fold were selected from the appropriate page of each issue. The stories chosen were judged to be the top three local stories of the day based on headline size, placement on the page, and story length.

Newspapers from which the stories were taken were:

National Reputation Newspapers

The New York Times ("Y" Edition)

The Wall Street Journal (Denver, Colo. Western Edition)

The Los Angeles Times

Regional-Local Reputation Newspapers

The Salt Lake Tribune (Salt Lake City)

The Deseret News (Salt Lake City)

Ogden Standard-Examiner (Ogden)

The Daily Herald (Provo)

Stories by White House Press Corps representatives of the following organizations were included:

Associated Press

Chicago Tribune

Cox News Service

Knight-Ridder News Service

The Los Angeles Times

The New York Times

United Press International

USA Today

The Washington Post

Sample articles by experienced writers inlcuded 152 stories containing 134,945 words. Average story length was 888 words.

Stories written by novice reporters represent the work of students in sections of beginning news writing at Brigham Young University during winter semester and summer terms of 1984. A story by each student in the three classes chosen randomly was included in the sample. Some stories were reports of events the students were assigned to attend and write about. Others were stories written from fact sheets provided by the class instructor or from playback of a videotaped event. All stories were written during the last four weeks of the course.

The sample of student writing included 60 stories containing 24,975 words. Average story length was 416 words.

Each of the 212 stories in the sample was analyzed using the "STYLE" and "ABSTRACT" programs of Bell Laboratories' "Writer's Workbench" package of writing/editing aids. "STYLE" measured the 28 categories of variables described

and defined in Chapter I, except for the percentage of abstract words, which was measured by "ABSTRACT."

Data generated by the two programs was analyzed in two ways:

1. A t-test between novice- and experienced-group mean scores for each variable was used to identify statistically significant cariables.

2. Step-wise discriminant analysis was used to identify the combination of variables that best discriminated between writing styles of the experienced and novice groups. This analysis also indicated how much variance is explained by the individual discriminant variables (Kachigan, 1982, p. 216).

The discriminant analysis produced a matrix showing the number of writers classified and misclassified as experienced or novice based on the set of predictor variables. This allowed the predictive power of the significant variables to be compared with the ideal.

The discriminant analysis also produced a list of predictor variables that could be compared to those identified by the t-test. It also allowed an overall percentage of cases classified correctly by the predictor variables collectively to be calculated. Also, this analysis provided some indication of how much of the difference between grousp in the sample was accounted for collectively by the predictor variables.

Some potentially interesting sidelights in the data

were explored through additional analyses. These additional questions were:

1. Does the structural writing style of The Wall Street Journal differ significantly from that of the other nationa-reputation newspapers? The Wall Street Journal is believed by many journalists to have a unique writing style.

2. Does the structural writing style of the two national newspapers differ significantly from the style of the regional and local newspapers?

An analysis of the variance and a discriminant analysis of the mean scores for each writing style variable in stories from The Wall Street Journal, The New York Times, The Los Angeles Times, and the Utah newspapers were used to explore the above questions.

ENDNOTES

Tucker, R.K., R.L. Weaver II, and C.B. Berryman-Fink, Research in Speech Communication, Englewood Cliffs, N.J.: Prentice-Hall, Inc. (1981).

Kachigan, S.K., Multivariate Statistical Analysis: A Conceptual Introduction, New York: Radius Press (1982).

CHAPTER IV

FINDINGS

Statistical analysis of the data identified variables that discriminate between the writing styles of experienced and novice journalists in the sample. This chapter will present the results of those analyses along with the estimates, indicated by discriminant analysis, of the amount of variance accounted for by the discriminating variables. Analysis of group mean scores identified specific differences among the writing styles of the newspapers used in the study. These findings also will be presented.

Experienced and Novice Styles Compared

Experienced journalists wrote significantly longer sentences on the average than did novices (21.80 vs. 19.90 words). The experienced reporters also wrote a hogher percentage of sentences that were longer than the experienced-group mean sentence length (14.88 vs. 10.98).

Table I shows mean scores on stylistic variables and their significance for experienced and novice groups.

TABLE I

STYLES OF EXPERIENCED AND NOVICE WRITERS COMPARED
(TWO-TAILED t-TEST, SEPARATE VARIANCE ESTIMATE)

Style Variable	Experienced Group Mean (n = 152)	Novice Group Mean (n = 60)	Probability ** = .001 * = .05
Sentence Length & Type			
Average Sentence Length	21.80	19.90	*
% Simple Sentences	42.51	44.17	
% Complex Sentences	35.73	35.50	
% Compound Sentences	9.01	8.08	
% Comp-Complex Sent.	12.79	12.22	
% Passive Sentences	12.11	11.70	
% Short Sentences	31.64	29.30	
% Long Sentences	14.88	10.98	*
Word Usage			
Average Word Length	4.80	4.59	**
% Content Words	60.03	57.82	**
Avg. Length Content Wds.	5.99	5.81	**
% To Be Verbs	30.90	36.93	**
% Auxiliary Verbs	20.96	20.58	
% Infinitives	15.25	12.58	*
% Prepositions	10.82	11.93	**
% Conjunctions	2.03	2.62	*
% Adverbs	3.91	3.81	
% Nominalizations	1.87	1.50	*
% Adjectives	19.15	17.92	*
% Pronouns	5.47	5.33	
% Nouns	27.51	27.05	
% Abstract Words	2.08	2.00	
Sentence Beginnings			
% Sent. Begin. Verbs	0.73	0.63	
% Sent. Begin. Conj.	4.11	1.35	**
% Sent. Begin. Prep.	8.02	7.78	
% Sent. Begin. Adverbs	4.00	4.73	
% Sent. Begin. Sub. Conj.	3.60	5.47	*
% Sent. Begin. Expletive	1.63	1.20	
Readability Scores			
Auto	12.09	9.97	**
Coleman-Liau	11.07	9.65	**

Experienced- and novice-group mean scores for each stylistic variable were compared using the two-tailed *t*-test with separate variance estimate. Significant differences were found between group means in the other three categories of variables in addition to sentence length and type: word usage, types of sentence beginnings, and readability scores.

Nine significant variables appeared in the word usage category. Experienced writers used longer content words (5.99 vs. 5.81 letters), and a higher percentage of infinitives (15.25 vs. 12.58), nominalizations (1.87 vs. 1.50), and adjectives (19.15 vs. 17.92). Novice writers used longer words overall (4.80 vs. 4.59 letters) and a higher percentage of to-be verbs (36.93 vs. 30.90), prepositions (11.93 vs. 10.82), and conjunctions (2.62 vs. 2.03).

Two significant variables appeared in the sentence-beginnings category. Experienced journalists began a higher percentage of sentences with conjunctions (4.11 vs. 1.35). Novice journalists began a higher percentage of sentences with subordinating conjunctions (5.47 vs. 3.60).

Mean readability scores of experienced and novice journalists were significantly different, with novices writing stories graded easier to read than stories written be experienced reporters. Reading-ease scores calculated by using the Coleman-Liau formula showed stories by experienced writers required 11th-grade reading skills (11.07) to comprehend them. Stories written by novices received a score in

the ninth-grade range (9.65), a difference of 1.42 grade levels.

Reading-ease scores calculated using the Automated Readability Index (Auto) formula showed stories written by experienced writers required reading ability at the high school senior level (12.09) for easy comprehension. Stories by novices, on the other hand, received a mean Auto score in the late ninth-grade range (9.97) of reading ease, a difference of 2.12 grades.

Individual Newspaper Style Comparisons

The objectives of the study were to analyze the writing styles of stories from the newspapers used as well as to compare those styles with the novice writing style. A one-way analysis of variance was used to identify significant differences between group mean scores of stories written by novices and those from The New York Times, The Los Angeles Times, The Wall Street Journal, and the four Utah daily newspapers considered as a single group. Duncan procedure used used to calculate the probability that differences in group mean scores would have occurred by chance.

This analysis indicates that the stories by experienced and novice journalists might be placed in two groups, based on the number of stylistic variables that were significantly different. The first group would contain stories from The New York Times and The Los Angeles Times. The second group would contain stories by novice writers and those from The

Wall Street Journal and Utah daily newspapers. Tables follow that show results of comparisons between mean scores of the stylistic variables found in stories from novices, the three newspapers of national reputation, and the Utah daily newspapers considered as a single group.

New York Times - Los Angeles Times

Writing styles of reporters from The New York Times and The Los Angeles Times were nearly identical when compared on the basis of the 30 Writer's Workbench variables. Table II shows the results of the comparison.

Only one significant difference appeared, the percentage of short sentences. The Los Angeles Times reporters wrote a higher percentage (38.14 vs. 32.38) of sentences five words or more shorter than the group mean. No statistical differences appeared in the other comparisons of stylistic variables.

TABLE II

STYLES OF NEW YORK TIMES AND LOS ANGELES TIMES COMPARED
(ONE-WAY ANALYSIS OF VARIANCE)

Style Variable	NYT-Group Mean (n = 21)	LAT-Group Mean (n = 21)	Probability * = At Least .05 Level
Sent. Length & Type			
Average Sent. Length	23.83	24.00	
% Simple Sent.	39.62	36.00	
% Complex Sent.	42.19	41.00	
% Compound Sent.	6.00	6.43	
% Comp- Complex Sent.	12.52	16.62	
% Passive Sent.	12.52	14.52	
% Short Sent.	32.38	38.14	*
% Long Sent.	17.52	20.71	
Word Usage			
Average Word Length	4.91	4.92	
% Content Words	59.53	59.75	
Avg. Length Cont. Words	6.21	6.17	
% To Be Verbs	29.05	29.19	
% Auxiliary Verbs	19.10	19.14	
% Infinitives	16.14	14.00	
% Prepositions	11.85	10.95	
% Conjunctions	2.71	2.85	
% Adverbs	3.34	3.63	
% Nominalizations	2.09	2.67	
% Adjectives	19.49	18.74	
% Pronouns	4.71	5.17	
% Nouns	27.76	27.78	
% Abstract Words	2.39	2.22	
Sentence Beginnings			
% Sent. Begin. Verbs	0.67	0.48	
% Sent. Begin. Conj.	3.90	2.95	
% Sent. Begin. Prep.	11.09	8.28	
% Sent. Begin. Adverbs	3.52	4.14	
% Sent. Begin. Sub. Conj.	3.57	2.81	
% Sent. Begin. Expletive	3.90	2.95	
Readability Scores			
Auto	13.59	13.74	
Coleman-Liau	11.85	11.93	

Because writing styles in these two newspapers are so similar, they will be considered as a single style in further comparisons, and it will be labeled as NYT/LAT style.

Wall Street Journal - Novice

Five significant differences appeared in the comparison of mean scores of the novice group and The Wall Street Journal on the 30 stylistic variables. Table III contains the results of this comparison.

Wall Street Journal reporters wrote stories containing a higher percentage of prepositions (11.93 vs. 10.82) and adverbs (3.91 vs. 3.81). Wall Street Journal stories also contained a higher percentage of sentences beginning with conjunctions (4.11 vs. 1.35). However, novices' stories contained a significantly higher total percentage of conjunctions (2.62 vs. 2.03) and to-be verbs (36.98 vs. 29.35).

Wall Street Journal - NYT/LAT

Wall Street Journal stories and stories in The New York Times and The Los Angeles Times differed on more than half the 30 Writer's Workbench variables. Seventeen significant differences appeared in the comparison of mean scores. Significant variables were found in all four categories of variables: sentence length and type, word usage, sentence beginnings, and readability scores. Results of this comparison are shown in Table IV.

TABLE III

STYLES OF WALL STREET JOURNAL AND NOVICE WRITERS COMPARED
(ONE-WAY ANALYSIS OF VARIANCE)

Style Variable	WSJ-Group Mean (n = 21)	Novice-Group Mean (n = 60)	Probability *= At Least .05 Level
Sent. Length & Type			
Avg. Sentence Length	18.65	19.90	
% Simple Sent.	48.00	44.17	
% Complex Sent.	34.55	35.50	
% Compound Sent.	7.70	8.08	
% Comp - Complex Sent.	9.70	12.22	
% Passive Sent.	8.60	11.70	
% Short Sent.	31.25	29.30	
% Long Sent.	13.45	10.98	
Word Usage			
Average Word Length	4.70	4.59	
% Cnotent Words	59.52	57.82	
Avg. Leng. Cont. Wds.	5.87	5.81	
% To-Be Verbs	29.35	36.93	*
% Auxiliary Verbs	18.10	20.58	
% Inifinitives	14.35	12.58	
% Prepositions	10.31	11.93	*
% Conjunctions	3.16	2.62	*
% Adverbs	4.83	3.81	*
% Nominalizations	1.20	1.50	
% Adjectives	17.39	17.92	
% Pronouns	6.70	5.33	
% Nouns	27.72	27.05	
% Abstract Words	1.75	2.00	
Sentence Beginnings			
% Sent. Begin. Verbs	0.65	0.63	
% Sent. Begin. Conj.	6.15	1.35	*
% Sent. Begin. Prep.	9.10	7.78	
% Sent. Begin. Adverbs	6.30	4.73	
% Sent. Begin. Sub. Conj.	3.65	5.47	
% Sent. Begin. Expletive	1.50	1.20	
Readability Scores			
Auto	10.03	9.97	
Coleman-Liau	10.24	9.65	

TABLE IV

STYLES OF WALL STREET JOURNAL AND NYT/LAT COMPARED
(ONE-WAY ANALYSIS OF VARIANCE)

Style Variable	WSJ-Group Mean (n = 21)	NYT/LAT-Group Mean (n = 42)	Probability *= At Least .05 Level
Sent. Length & Type			
Avg. Sentence Length	18.65	23.92	*
% Simple Sent.	48.00	37.81	*
% Complex Sent.	34.55	41.59	*
% Compound Sent.	7.70	6.21	
% Comp-Complex Sent.	9.70	14.57	*
% Passive Sent.	8.60	13.52	*
% Short Sent.	31.25	35.26	
% Long Sent.	13.45	19.12	*
Word Usage			
Average Word Length	4.70	4.91	*
% Content Words	59.52	59.64	
Avg. Leng. Cont. Wds.	5.87	6.19	*
% To-Be Verbs	29.35	29.11	
% Auxiliary Verbs	18.10	19.12	
% Infinitives	14.35	15.07	
% Prepositions	10.31	11.40	
% Conjunctions	3.16	2.78	
% Adverbs	4.83	3.49	*
% Nominalizations	1.20	2.38	*
% Adjectives	17.39	19.11	*
% Pronouns	6.70	4.93	*
% Nouns	27.72	27.79	
% Abstract Words	1.75	2.31	*
Sentence Beginnings			
% Sent. Begin. Verbs	0.65	0.57	
% Sent. Begin. Conj.	6.15	3.43	*
% Sent. Begin. Prep.	9.10	9.69	
% Sent. Begin. Adverbs	6.30	3.83	*
% Sent. Begin. Sub. Conj.	3.64	3.24	
% Sent. Begin. Expletive	1.50	1.50	
Readability Scores			
Auto	10.03	13.67	*
Coleman-Liau	10.24	11.87	*

The NYT/LAT style was characterized by longer sentences (23.92 vs. 18.65 words) and longer words (4.91 vs. 4.70 letters). It also included a lower percentage of simple sentences (37.83 vs. 48.00), and a higher percentage of complex sentences (41.59 vs. 34.55, a higher percentage of compound-complex sentences (14.57 vs. 9.70), and a higher percentage of passive sentences (13.52 vs. 8.60). NYT/LAT writers used a higher percentage of abstract words (2.31 vs. 1.75), nominalizations (2.38 vs. 1.20), and adjectives (19.11 19.11 vs. 17.39). NYT/LAT writing produced readability scores indicating greater reading difficulty with both formulas, Coleman-Liau (11.89 vs. 10.24) and Automated Readability Index (Auto) (13.67 vs. 10.03).

The Wall Street Journal style was characterized by shorter, simpler, more active sentences, shorter words, and a higher percentage of concrete words. Readability scores indicated easier-to-read writing. In addition, Wall Street Journal writers began a higher percentage of sentences with conjunctions (6.15 vs. 3.43) and adverbs (6.30 vs. 3.83). They also used a higher total percentage of adverbs (4.83 vs. 3.49) and pronouns (6.70 vs. 4.93).

Utah - Wall Street Journal

Eight significant differences appeared in the comparison of mean scores of the Utah daily newspapers group and the The Wall Street Journal on the 30 stylistic variables. Table V shows the results of this comparison.

TABLE V

STYLES OF WALL STREET JOURNAL AND UTAH DAILIES COMPARED
(ONE-WAY ANALYSIS OF VARIANCE)

Style Variable	WSJ-Group Mean (n = 21)	Utah-Group Mean (n = 81)	Probability *= At Least .05 Level
Sent. Length & Type			
Average Sentence Length	18.65	20.90	
% Simple Sent.	48.00	45.75	
% Complex Sent.	34.55	31.24	
% Compound Sent.	7.70	11.43	*
% Comp-Complex Sent.	9.70	11.55	
% Passive Sent.	8.60	13.14	*
% Short Sent.	31.25	29.30	
% Long Sent.	13.45	12.54	
Word Length & Usage			
Average Word Length	4.70	4.75	
% Content Words	60.03	60.78	
Avg. Leng. Cont. Words	5.87	5.90	
% To-Be Verbs	29.35	32.25	
% Auxiliary Verbs	18.10	20.33	
% Infinitives	14.35	14.99	
% Prepositions	10.31	10.60	
% Conjunctions	3.16	3.17	
% Adverbs	4.83	3.70	*
% Nominalizations	1.20	1.89	
% Adjectives	17.39	19.85	*
% Pronouns	6.70	5.38	
% Nouns	27.72	27.69	
% Abstract Words	1.75	1.88	
Sentence Beginnings			
% Sent. Begin. Verbs	0.65	0.70	
% Sent. Begin. Conj.	6.15	3.51	*
% Sent. Begin. Prep.	9.10	5.96	*
% Sent. Begin. Adverbs	6.30	2.99	*
% Sent. Begin. Sub. Conj.	3.65	3.51	
% Sent. Begin. Expletive	1.50	1.63	
Readability Scores			
Auto	10.03	11.39	*
Coleman-Liau	10.24	10.71	

Utah reporters wrote a higher percentage of compound sentences (11.43 vs. 7.70) and a higher percentage of passive sentences (13.14 vs. 8.60). Wall Street Journal writers used a higher percentage of adverbs (4.83 vs. 3.70), while Utah writers' stories had a higher percentage of adjectives (19.85 vs. 17.39). Wall Street Journal reporters wrote a higher percentage of sentences that began with conjunctions (6.15 vs. 3.51), prepositions (9.10 vs. 5.96), and adverbs (6.30 vs. 2.99). Utah reporters wrote stories that scored more difficult to read by the Auto formula but not by the Coleman-Liau formula.

Results of Newspaper Comparisons

Indications emerged that the sample contained at least two basic styles. One clear style was that represented by writing in The New York Times and The Los Angeles Times. The other style was represented by writing of The Wall Street Journal staff members, and it seemed to be similar to the writing of novices and Utah newspaper reporters, although dicriminant analysis showed this to be significantly different.

Styles of The New York Times and The Los Angeles Times, as was mentioned, were nearly identical. The style of Wall Street Journal writers differed significantly from NYT/LAT style on 17 of the 30 stylistic variables. However, styles of the novices and the Utah newspaper reporters seemed more like Wall Street Journal style. Novices wrote stories that

showed significant differences from Wall Street Journal stories on only four variables, and Utah journalists wrote stories that differed on eight of 30 variables.

Comparisons using other possible combinations of the data are shown in Tables VI-VIII. Table VI shows results of comparing mean scores of novices and Utah journalists. Table VII shows results of the Utah - NYT/LAT comparison. Table VIII shows results of comparing novice mean scores on the variables with those of NYT/LAT writers.

Emergence from the univariate analyses of what seemed to be at least two basic styles raised questions. How could characteristics of 17 significant variables that differentiated between NYT/LAT and Wall Street Journal styles as described in a comprehensible way? A second question was even more puzzling. What explanation could there be for similarities between the awkward, unpolished writing styles of novices and that of experienced Utah journalists or, especially, between novice style and that of the elite Wall Street Journal reporters?

Data from the multivariate discriminant analysis was analyzed in an attempt to address these questions.

TABLE VI

STYLES OF UTAH JOURNALISTS AND NOVICE WRITERS COMPARED
(ONE-WAY ANALYSIS OF VARIANCE)

Style Variable	Utah-Group Mean (n = 81)	Novice Group Mean (n = 60)	Probability *= At Least .05 Level
Sent. Length & Type			
Avg. Sent. Length	20.90	19.90	
% Simple Sent.	45.75	44.17	
% Complex Sent.	31.24	35.50	*
% Compound Sent.	11.43	8.08	*
% Comp-Complex Sent.	11.55	12.22	
% Passive Sent.	13.14	11.70	
% Short Sent.	29.30	29.30	
% Long Sent.	12.54	10.98	
Word Usage			
Average Word Length	4.75	4.75	*
% Content Words	60.78	57.82	*
Avg. Leng. Cont. Wds.	5.90	5.81	
% To-Be Verbs	32.25	36.93	*
% Auxiliary Verbs	20.33	20.58	
% Infinitives	14.99	12.58	*
% Prepositions	10.60	11.93	*
% Conjunctions	3.17	2.62	*
% Adverbs	3.70	3.81	
% Nominalizations	1.89	1.50	
% Adjectives	19.85	17.92	*
% Pronouns	5.38	5.33	
% Nouns	27.69	27.05	
% Abstract Words	1.88	2.00	
Sentence Beginnings			
% Sent. Begin. Verbs	0.70	0.63	
% Sent. Begin. Conj.	3.58	1.35	*
% Sent. Begin. Prep.	5.96	7.78	
% Sent. Begin. Adverbs	2.99	4.73	
% Sent. Begin. Sub. Conj.	3.51	5.47	*
% Sent. Begin. Expletive	1.63	1.20	
Readability Scores			
Auto	11.39	9.97	*
Coleman-Liau	10.71	9.65	*

TABLE VII

STYLES OF UTAH NEWSPAPERS AND NYT/LAT COMPARED
(ONE-WAY ANALYSIS OF VARIANCE)

Style Variable	Utah-Group Mean (n = 81)	NYT/LAT-Group Mean (n = 42)	Probability *= At Least .05 Level
Sent. Length & Type			
Average Sentence Length	18.65	23.92	*
% Simple Sent.	48.00	37.81	*
% Complex Sent.	34.55	41.59	*
% Compound Sent.	7.70	6.21	*
% Comp-Complex Sent.	9.70	14.57	*
% Passive Sent.	8.60	13.52	*
% Short Sent.	31.25	35.26	*
% Long Sent.	13.45	19.12	*
Word Usage			
Average Word Length	4.70	4.91	*
% Content Words	59.52	59.64	
Avg. Leng. Cont. Words	5.87	6.19	*
% To-Be Verbs	29.35	29.11	*
% Auxiliary Verbs	18.10	19.12	
% Infinitives	14.35	15.07	
% Prepositions	10.31	11.40	*
% Conjunctions	3.16	2.78	*
% Adverbs	4.83	3.49	
% Nominalizations	1.20	2.38	*
% Adjectives	17.39	19.11	
% Pronouns	6.70	4.93	
% Nouns	27.72	27.79	
% Abstract Words	1.75	2.31	*
Sentence Beginnings			
% Sent. Begin. Verbs	0.65	0.57	
% Sent. Begin. Conj.	6.15	3.43	
% Sent. Begin. Prep.	9.10	9.69	*
% Sent. Begin. Adverbs	6.30	3.83	
% Sent. Begin. Sub. Conj.	3.65	3.24	
% Sent. Begin. Expletive	1.50	1.50	
Readability Scores			
Auto	11.39	13.67	*
Coleman-Liau	10.71	11.89	*

TABLE VIII

STYLES OF NOVICE WRITERS AND NYT/LAT COMPARED
(ONE-WAY ANALYSIS OF VARIANCE)

Style Variable	Novice Group Mean (n = 21)	NYT/LAT Group Mean (n = 42)	Probability *= At Least .05 Level
Sent. Length & Type			
Average Sent. Length	19.90	23.92	*
% Simple Sent.	44.17	37.81	
% Complex Sent.	35.50	41.59	*
% Compound Sent.	8.08	6.21	
% Comp-Complex Sent.	12.22	14.57	*
% Passive Sent.	11.70	13.52	
% Short Sent.	29.30	35.26	*
% Long Sent.	10.98	19.12	*
Word Usage			
Average Word Length	4.59	4.91	*
% Content Words	57.82	59.64	
Avg. Leng. Cont. Wds.	5.81	6.19	*
% To-Be Verbs	36.93	29.11	*
% Auxiliary Verbs	20.58	19.12	
% Infinitives	12.58	15.07	*
% Prepositions	11.93	11.40	
% Conjunctions	2.62	2.78	
% Adverbs	3.81	3.49	
% Nominalizations	1.50	2.38	*
% Adjectives	17.92	19.11	
% Pronouns	5.33	4.93	
% Nouns	27.05	27.79	
% Abstract Words	2.00	2.31	
Sentence Beginnings			
% Sent. Begin. Verbs	0.63	0.57	
% Sent. Begin. Conj.	1.35	3.43	*
% Sent. Begin. Prep.	7.78	9.69	*
% Sent. Begin. Adverbs	4.73	3.83	
% Sent. Begin. Sub. Conj.	5.47	3.24	
% Sent. Begin. Expletive	1.20	1.50	
Readability Scores			
Auto	9.97	13.67	*
Coleman-Liau	9.65	11.87	*

Collectively Discriminating Variables

Now we turn to an analysis of the data by multivariate discriminant analysis. This section will briefly explain the procedure, then discuss the findings.

Discriminant analysis is a statistical procedure in which linear combinations of variables are used to distinguish between members of two or more groups. One advantage of a stepwise discriminant analysis for this study is that it produces a set of predictor variables able to separate the 212 stories into the groups to which they belong.

Klecka (1975, p. 436) explained that the stepwise discriminant analysis procedure first selects the single variable best able to discriminate among groups. A second discriminating variable is selected as the variable best able to improve discrimination in combination with the first variable.

Subsequent variables are added on the basis of their ability to contribute further discrimination. Variables already selected may be removed at each step if they are found to lower discrimination when combined with recently selected variables. The process stops when all variables have been selected or it is found that the remaining variables no longer are able to contribute to further discrimination.

After the stepwise procedure selected 10 significant predictor variables, they were weighted and linearly combined to separate the scores of each group of writers as

statistically distinctly as possible from every other group. This process created "discriminant functions," the set of weighted variables which best discriminates among writing styles in the sample.

For example, an ideal set of discriminant predictor variables would place news stories on a continuum comprising stories by experienced writers at one end and stories by novices at the other. An actual analysis, of course, is unlikely to be ideal. The structure of some student writing is similar to that of professionals and vice versa. Such pieces of writing are difficult to classify and are more likely to be misclassified.

Four discriminant functions were produced by the analysis, each representing a different writing style dimension. Only the first two of these, those richest in information explaining the variance, were used by the analysis procedure. Those two will be discussed here. Coefficients of correlation between each of the significant variables and each of the discriminant functions allow the variables underlying each function to be identified. This will be discussed later.

The two discriminant functions were able to separate significantly the writing styles of the five groups. Significance between pairs of groups is shown in Table IX. Differences between all pairs of group mean scores, except the New York Times - Los Angeles Times pair, have a probability of occurring by chance less than once in a thousand times.

Discriminant analysis was not able to separate, to a significant degree, stories by reporters of The New York Times and The Los Angeles Times, because their styles were so similar.

TABLE IX

SIGNIFICANCE BETWEEN PAIRS OF GROUPS AT CONCLUSION OF STEPWISE DISCRIMINANT ANALYSIS

Group	Novice	WSJ	Utah	NYT
WSJ	F = 7.03 p. <.001			
Utah	F = 12.39 p. <.001	F = 3.22 p. <.001		
NYT	F = 7.13 p. <.001	F = 3.45 p. <.001	F = 5.71 p. <.001	
LAT	F = 9.22 p. <.001	F = 3.87 p. <.001	F = 5.64 p. <.001	F = 1.07 p.= .385

d.f. for each F statistic is 10 and 189

Analysis of variance comparisons discussed earlier see seemed to indicate that the writing styles of novices and Utah journalists were similar. The significant degree of separation produced by the discriminant analysis, shown in Table VIII, indicated that all five groups have fairly distinct individual styles. Although styles of novices and

Utah journalists differ from Wall Street Journal reporters on a relatively few variables, the styles are statistically different. The F table also shows that writing styles of New York Times and Los Angeles Times reporters are statistically indistinguishable when measured by Writer's Workbench variables.

Associated with each discriminant function is a canonical correlation figure. This value squared measures the proportion of the variance in the discriminant function explained by the groups (Klecka, 1975, p. 442). It serves a function similar to that of eta in analysis of variance. The canonical correlation for Function 1 is .66 and for Function 2 it is .56. The square of the Function 1 correlation value is .43, and the Function 2 value squared is .31. Both are rather high figures, considering that the variables represent only structural features of the writing.

Discriminant analysis also calculates collective mean scores for all stylistic variables. These collective mean acores, called centroids, are points around which cluster th the stylistic scores of individual stories in the sample. These centroids can be located within the Cartesian space defined by the discriminant functions. When plotted, centroid locations show graphically how widely and in which direction group scores are separated by the discriminant functions. Figure 1 shows where the five groups centroids fall in the space defined by the first and second discriminant functions.

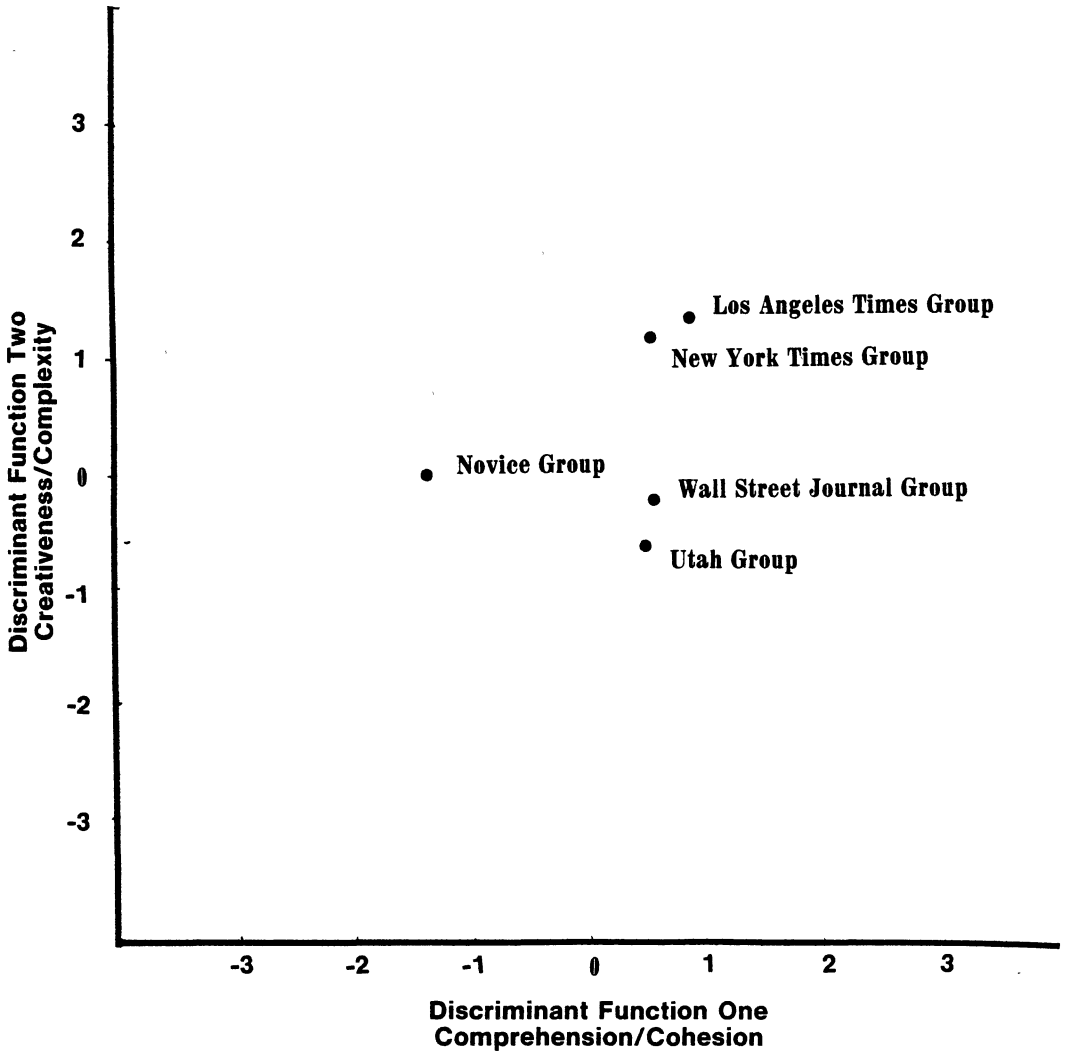

Figure 1. Plots of Group Centroids on Discriminant Functions

Discriminant Function 1 defines the horizontal axis of Figure 1. Discriminant Function 2 defines the vertical axis. The imaginary center point where the two axes intersect represents the grand mean for all scores of all groups. Mean scores, or centroids, for each of the five groups have a value on both discriminant functions. Table X lists group centroid values on both functions.

TABLE X

VALUES OF GROUP CENTROIDS ON DISCRIMINANT FUNCTIONS

Group	Function One (Comprehension/ Cohesion)	Function Two (Creativeness/ Complexity)
Novice	-1.31	.11
Wall Street Journal	.55	-.16
Utah	.46	-.64
New York Times	.52	1.19
Los Angeles Times	.91	1.12

Group centroids for The New York Times and The Los Angeles Times cluster by themselves with high values on discriminant Function 1 (NYT = .52, LAT = .91) and Function

2 (NYT = 1.19, LAT = 1.12). Utah newspapers and the Wall Street Journal are relatively close, with both having positive values on Function 1 (Utah = .46, WSJ = .55)and negative values on Function 2 (Utah = -.64, WSJ = -.16). The centroid for the novice group is clearly separated from the other four groups and has a negative value (-1.31) on Function 1 and a positive value (.11) on Function 2.

As was mentioned above, discriminant analysis correlates each variable with the discriminant function and calculates standardized discriminant function coefficients for each significant variable. These may be interpreted much as are weighting coefficients in multiple regression and factor analysis (Klecka 1975, p. 436). Discriminant function coefficients identify the variables which contribute most to differentiation along the stylistic dimension represented by the function. "Loadings" on the 10 significant variables associated with the two discriminant functions are shown in Table XI.

TABLE XI

RELATIVE CONTRIBUTION OF VARIABLES TO THE DISCRIMINATING ABILITY OF FUNCTIONS (CLASSIFICATION COEFFICIENTS STANDARDIZED AS Z SCORES)

Variable	Function 1 (Comprehension/ Cohesion)	Function 2 (Creativeness/ Complexity)
Auto Readability Score	.91	.96
Average Sentence Length	-.15	-1.18
% Content Words	.63	-.43
% Long Sentences	.46	.53
% Complex Sentences	-.17	.58
% Compound-Complex Sentences	-.47	.34
% Prepositions	-.34	.40
% Pronouns	.82	-.17
% Sent. Begin. Sub. Conj.	-.17	.45
% Sent. Begin. Conj.	-.13	-.13

Variables correlating positively with and loading significantly on Function 1 are generally those associated with Lynch's (1970) stylistic concept Comprehension. However, the percentage of pronouns, the variable with the second highest loading, is associated in the literature with Cohesion. Discriminant Function 1 appears to define stylistic dimensions that might be labeled Cohesion/Comprehension.

Variables correlating with and loading significantly on Function 2 are generally those associated with Lynch's (1970) stylistic concept Creativeness. This dimension is a measure of the length and complexity of writing. Discrimi-

nant Function 2 appears related to the stylistic dimension labeled Creativeness in the literature. Readability scores correlated with both functions.

Lynch's stylistic dimensions and indexes are compared with available Writer's Workbench variables in Table XII.

TABLE XII

LYNCH'S STYLISTIC DIMENSIONS AND INDEXES WITH WRITER'S WORKBENCH EQUIVALENTS

STYLISTIC DIMENSION Stylistic Index	Definition	Closest WWB Equivalent
COMPREHENSION		
Readability	Ease of Reading Index	Readability Score
Redundancy	Ratio Function Words Per Sentence	% Content Words
Sentence Length	Ratio Words Per Sentence or Ratio Characters Per Sentence	Average Sentence Length
Complexity	Ratio Syllables per 100 Words or Characters to Words	Average Word Length
CREATIVENESS		
Productivity	Frequency of Words or Sentences	Story Length
Syntactic Dispersion	Varaiance in Parts of Speech	No Equivalent
Consistency	Characters Per Word/Sentence or Ratio Function Words Per Sentence	No Equivalent
Abstraction	Ratio Abstract Nouns/Verbs to Total Nouns and Verbs	% Abstract Words
Complexity	Ratio Syllables Per 100 Words and Ratio Characters Per Word	Average Word Length
Pausality	Internal Sentence Punctuation	No Equivalent

Comprehension and Creativeness

The stylistic constructs Comprehension and Creativeness need to be discussed briefly here to clarify their intended meanings. These concepts, refined primarily by Lynch (1967, 1968, 1970) and his associates, summarize the collective functions of a number of underlying stylistic variables. This writer found the fit between construct and variables sometimes uncomfortable, but there were better basic terms to suggest. However, the present study expands labels for both constructs to reflect a somewhat broader scope for the first dimension and a clearer description of the second.

Incentive to change construct labels grows out of the wide difference between common use of the words comprehension and Creativity and all that is encompassed by Lynch's Comprehension and Creativeness. They stylistic construct Comprehension describes functions of the variables readability, percentage of function words (e.g., articles, prepositions, conjunctions), sentence length, and complexity (as reflected in word length and number of syllables per word). Not only are the variables underlying Comprehension complex, but the complexity is compounded by the fact that some correlate positively and some negatively with comprehensibility.

In the present study, the percentage of pronouns and use of conjunctions at the beginnings of sentences also were found to be associated with Comprehension. Frequency of pronouns and conjunctions is normally a measure of cohesion. To

account for the cohesive component of the stylistic dimension, it was called Comprehension/Cohesion.

The construct Creativeness also was relabeled to make it more descriptive. One would tend, on first glance, to equate Creativeness with creativity. However, it encompasses even more variables than Comprehension. Some of these are: productivity (total word/story length), sytactic dispersion (variance of parts of speech used), abstraction (percentage of abstract words), and pausality (ratio of internal punctuation to sentences).

The construct Creativeness does not describe creativity in the sense that the writer might be clever, stimulating, or artistic. It relates more to being creative in the sense of being able to create or of being productive. Stylistic Creativeness is related in the literature to writing characterized by greater total length, with longer sentences containing more subordinate clauses and phrases, and with a larger vocabulary or longer words. Creativeness is a measure of length and complexity.

Some researchers associate Creativeness with maturity of style. Here, Creativeness is viewed as a stylistic dimension that might be described as more "literary," when compared with "journalistic" style, but not necessarily more mature. "Mature" takes on positive connotations when used to describe writing style. This implies that other styles may be "immature," which carries a prejudicial, emotional connotation that will be avoided in the discussion that follows.

ENDNOTES

Klecka, W.R., "Discriminant Analysis," Statistical Package for the Social Sciences, in N.H. Nie, et al., New York: McGraw-Hill Book Company (1975).

Lynch, M.D., "Stylistic Analysis," in P. Emmert and H. Brooks, eds., Methods of Research in Communication, Boston: Houghton Mifflin, pp. 315-342 (1970).

CHAPTER V

SUMMARY, DISCUSSION, AND CONCLUSIONS

Summary

A collection of computer programs called Writer's Workbench was used to measure 30 stylistic variables in each of 152 newspaper stories written by experienced reporters and 60 stories written by student journalists. Stories by experienced reporters were written by members of the White House Press Corps, and staff members of The New York Times, The Wall Street Journal, The Los Angeles Times, and four Utah daily newspapers. Student writing was produced during the final four weeks of news writing classes at Brigham Young University. Statistical comparisons were made between writing styles of experienced and novice journalists and among styles of the newspapers in the sample.

It was found that experienced reporters wrote significantly longer sentences, used longer words, employed a higher percentage of complex sentence structures, and wrote more stories scored more difficult to read by standard readability formulas. Differences between experienced and novice journalists and among newspaper styles were found on stylistic dimensions with complex underlying variables.

Writing of novices differed from that of experienced journalists on the stylistic dimension of Comprehension/Cohesion. Associated with this dimension are the following variables: percentage of pronouns, percentage of content words, average sentence length, average word length, and reading difficulty. The stylistic dimension of Creativeness/Complexity discriminated between styles of individual newspapers. Associated with Creativeness/Complexity are the following Writer's Workbench variables: story length, percentage of abstract words, and average word length. Three additional variables not measured by Writer's Workbench also correlate with this stylistic dimension: syntactic dispersion (an index of variance in parts of speech), consistency (characters per word/sentence or a ratio of function words per sentence), and pausality (internal sentence punctuation).

Findings of this study indicate a need for further research to understand better these stylistic dimensions and their associated variables. The study also points to a need to reexamine stress in journalism classes on brevity, simplicity, or readability scores alone to achieve comprehension.

Discussion

Newswriting styles examined in this study differed primarily along two dimensions. The first relates to the stylistic construct which the literature calls Comprehension, but also associated with this dimension are variables

related in the literature to Cohesion. In this study the first stylistic dimension will be called Comprehension/Cohesion to account for the combination of features. Writing style of novice reporters differed significantly from that of experienced journalists on this dimension.

The second dimension relates to the stylistic construct that the literature calls Creativeness, but which, in this study, will be labeled Creativeness/Complexity to describe better its underlying variables. News writing styles of the experienced journalists differed among themselves on this dimension to a greater extent than the styles of the professionals differed from the novices. Wall Street Journal and Utah daily newspaper styles, although statistically distinct, were similar to each other in Comprehension/Cohesion. Styles of The Wall Street Journal and Utah newspapers were significantly different from those of New York Times and Los Angeles Times writers, whose styles were similar in Creativeness/Complexity.

This chapter will present some cautions about the findings, elaborate on the findings, make recommendations for future research, and draw conclusions about the study's implications for journalism educators.

Cautions

Findings in this study need to be interpreted conservatively because of the small sample size and the large number of variables, because of the lack of other similar

studies, and because of the volatility of writing style variables as they interact.

An idea of how volatile the variables can be seen by comparing the results of the analysis of variance and the discriminant analysis. Some variables identified as being significant in the ANOVA were not selected as significant variables in the discriminant analysis.

Klecka (1975) explained that variables may lose their discriminating power when associated with other variables, because the information they contain about group differences is available in some combination of variables. Redundant variables are therefore dropped from the list of significant predictor variables. Apparently, some variables that are significant in single direct comparisons become insignificant in the context of the total range of variables acting together.

Because no similar studies have been conducting using Writer's Workbench variables, results of this study should be cross-validated using additional samples of journalistic writing. Stories analyzed in this research were mostly "hard" news, but some were features or "soft" news. The kinds of stories being analyzed could affect the results. Other studies should compare results of analysis of various kinds of writing or stories from various sections of the newspaper. Sample sizes should be increased, if possible.

McLaughlin (1980, p. 188) stated that sample size varies widely depending on the number of variables and the

nature of the populations being studied. She cites some research that suggests 10 to 20 observations may be needed for each variable. McLaughlin also points out that some statisticians suggest that no more than three to five variables can be selected before "noise" factors make the results suspect. Tucker, Weaver and Berryman-Fink (1981, p. 193) maintain that correlational studies, such as discriminant analysis, require a minimum of 200 subjects. This study falls within this minimum (n = 212). Future studies might also use a smaller number of variables shown to be highly significant.

A possible weakness relates to the variables measured by "STYLE" and "ABSTRACT." Writer's Workbench programs do not calculate all the variables needed to make direct, complete comparisons with constructs in the literature. Discussion which follows is based on approximations which seem sound, but admittedly could have weaknesses because direct comparisons were not available.

However, several of the variables supporting the stylistic constructs Comprehension and Creativeness are available only when they are hand-counted by persons with considerable expertise. It seems useful to make preliminary judgments even though they may need refining, when these judgments can be based on variables easily available from the Writer's Workbench computer analysis. Studies based on such variables might move the understanding of writing style ahead more quickly than studies that must rely on variables that are less readily available.

Experienced and Novice Styles

Experienced journalists wrote stories more difficult to read by 1.42 grade levels as measured by the Coleman-Liau readability formula and by 2.12 grades as measured by the Auto readability formula. Experienced writers created longer sentences, used longer words, and wrote more sentences that were longer than their own group average. Yet, experienced journalists' stories ranked higher on the multivariate Comprehension/Cohesion dimension of style than did those of the novices.

These findings fly in the face of conventional wisdom about readability scores and comprehension. At first glance, it seems contradictory to say that a writing style typified by longer words plus longer and more complex sentences would be more comprehensible. What seems like a contradiction grows out of the fact that popular articles and journalistic lore have overemphasized the relationship between brevity/simplicity and comprehension.

Data from this study suggest that extremely short sentences and simple words characterize a novice style that develops, with experience, to include longer words and sentences. These features of the experienced journalist's style, along with others, discriminate between it and the beginner's style.

Reported studies mention the relationship between sentence length and comprehension, but the references are more frustrating than enlightening. Ruffner (1980) in his empiri-

cal comparison of writing styles of journalism students who received high and low grades found that sentence length separated the groups significantly. His study does not report whether the high-rated or low-rated students wrote the longer sentences. Burgoon, Burgoon, and Wilkinson (1981, p. 231) reported that "average sentence length may affect the ease with which the newspaper can be read," but they did not say whether longer sentences would make reading easier or more difficult.

However, Witte and Faigley (1981, p. 195) found that freshmen who composed high-rated essays wrote longer sentences. Cooper, et al. (1984) reported the results of two studies, one comparing high- and low-rated student essays and the second comparing the writing of freshmen, juniors, Ph.D. candidates and professional literary critics. In both studies, the more experienced writers produced longer sentences on average. The authors attributed this to the skilled writer's ability to "pack more information into each T-unit (independent clause), information that qualifies, elaborates, specifies, or modifies." Another possible explanation might be that English professors would be more likely to give high ratings to a piece of writing using longer words and more complicated sentence structure.

Early readability research correlated short sentences and simple words with high comprehension scores (Powell, 1981, p. 44). Discriminant analysis revealed that the relationship between style and Comprehension/Cohesion is broader

and more complex than can be measured by a standard readability formula alone. The present study identified a group of Writer's Workbench variables, readability scores being only one, that collectively differentiate between stories along the Comprehension/Cohesion dimension. A readability score, based primarily on word and sentence length, is only one of several variables underlying Comprehension/Cohesion. Merely using shorter words to write shorter, simpler sentences does not meet all aspects of the challenge to write comprehensible, cohesive news stories.

Powell (1981, p. 44) sensed this as he described problems with readability formulas. "They don't tell a writer how to improve his writing," he observed. "The form of the equations suggests simplifying complex words and complex sentences, but which words and which sentences? The work of editing remains the author's task." Alexander (1984) also explained the breadth of the challenge to write comprehensibly as he criticized the use of readability scores alone to set standards for textbooks, insurance forms, and training manuals:

> The net result of this pressure has been more awareness of the readability tests. To some extent, readability of documents has probably been improved. But it is also true that people have learned how to make documents score better on the readability tests without actually improving their "real-world" readability--the degree to which people are able to read and comprehend them easily.
>
> This unfortunate state of affairs has come about because readability tests do not actually measure reading difficulty. Many components of reading difficulty, such as sentence complexity and the use of familiar words in unfamiliar grammatical roles, are

completely ignored.

> With sentence parsing software of the kind described in this article, it should be possible to derive readability tests which are better than those in common use today. It should be possible to devise one which reflects (rather than just correlates with) the actual sources of reading difficulty. Such tests would not only act as better indications of actual readability, they would also serve as better guides to authors and editors (p. 7).

Lynch (1970, pp. 326-329) found four variables correlated with the Comprehension dimension of style: (1) readability scores, (2) percentage of function words (articles, prepositions, and conjunctions), (3) sentence length, and (4) ratio of syllables to 100 words and syllables to words. The discriminant analysis which separated novice from experienced writing styles and individual newspaper styles from each other revealed additional associated variables: percentage of pronouns, percentage of content words, and percentage of sentences beginning with conjunctions.

Cherry (1982, pp. 102, 103) said pronouns "add cohesiveness and connectivity." Writing with no pronouns also would be wordy, she says, because pronouns provide a shorthand reference to something already mentioned. Kessler and McDonald (1984, p. 17) described pronouns as parts of speech that "help us avoid restating nouns in a sentence, which gives our writing greater flexibility." Percentage of content words is an inverse measure of function words, articles, conconjunctions, and prepositions. Cherry (1982, p. 103) also describes conjunctions as words that provide connectivity and parallelism, both related to cohesion.

Variables such as reading ease, percent of pronouns, percent of content words, and sentences beginning with conjunctions appear to act in concert to make writing readable and cohesive. Easy-to-read news stories, as measured by readability formulas alone, may be less comprehensible and cohesive than those scoring higher in reading difficulty but which have other features that make them effective.

Figure 1 in Chapter IV (p. 64) shows plots of the group centroids of scores by novice writers, and scores from The New York Times, The Los Angeles Times, The Wall Street Journal, and the four Utah newspapers considered as a single group. Group scores are plotted on two dimensions, represented by imaginary horizontal and vertical lines passing through the center point of the plot. This imaginary center point represents the gran mean of all scores in all groups. Centroids, or mean scores for each group, are calculated for both dimensions.

Examination of the centroids shows that Function 1, the Comprehension/Cohesion dimension, discriminated best between novice and experienced groups. The centroid of novices, as a group, had a negative value on this dimension, while centroids of all experienced-writer groups fall within a relatively narrow range of positive values. Variables underlying and correlating positively with this dimension discriminate best between writing styles of novices and experienced journalists. Results of this study indicate educators may need to pay attention to the development of

skills to produce writing that:

1. Scores moderately high, rather than very low, in reading difficulty, as measured by standard readability formulas.
2. Contains a relatively high percentage of effectively used pronouns.
3. Contains a relatively high percentage of sentences longer than the mean sentence length.
4. Contains more sentences beginning with conjunctions.

This study also indicates that there are numerous journalistic styles. Further research is needed to describe them and help educators know which one or which ones to teach.

Styles of Individual Newspapers

Writing styles of individual newspapers analyzed seem to separate into those using a more complex, more "literary" style and those using a simpler "formula" style. All seem nearly equally comprehensible and cohesive. Writing styles also seem to group newspapers into "reporter's papers" and "editor's papers." A reporter's newspaper employs journalists with well-developed writing skills and allows them freedom to produce more personal, more colorful, more expressive stories. An editor's newspaper requires writing tailored to stylistic policies established by editors. This section will elaborate on these interpretations and draw conclusions about them.

Centroid plots along the Discriminant Function 2, represented by the vertical axis in Figure 1, reveal stylistic differences among individual newspapers as well as between experienced journalists and student writers. Function 2, which is related to Creativeness/Complexity, does not discriminate well between the styles of experienced writers and novices. The novice-group centroid value on Function 2 is similar to those of The Wall Street Journal group and the Utah newspaper group. These two groups of experienced journalists are as different from the New York Times/Los Angeles Times (NYT/LAT) group as the novices are. These similarities and differences reveal interesting insights.

Centroids of Wall Street Journal writers group (-.16) and the Utah newspapers group (-.64) have negative values on the Creativeness/Complexity dimension. The centroid of the novice group (.11) is positive, but near zero. Centroids of the New York Times (1.19) and Los Angeles Times (1.12) groups have relatively high positive values and are separated widely from the other groups on the vertical dimension.

Analysis of variance of newspaper scores on predictor variables (Table IV) shows that NYT/LAT style is more complex compared with Wall Street Journal style. It uses significantly longer words, more abstract words, longer sentences, more complicated sentence structure, and a higher percentage of prepositions.

Clearly, the more complex style of the NYT/LAT group separates it from the other journalistic styles. Wall Street

Journal writing and stories from the Utah newspapers have none of the components that separate NYT/LAT writing from Them, as indicated by the negative values of their group centroids. It would be interesting to plot literary styles from published contemporary short stories and novels along with the journalistic styles. This writer's hypothesis is that NYT/LAT style would correlate more closely with literary styles than would Wall Street Journal or Utah newspaper styles.

Table IX shows that NYT/LAT (NYT = .52, LAT = .91) style is more "comprehensible/cohesive" than that of the Wall Street Journal (.55). WSJ style, in turn, is slightly more "comprehensive/cohesive" than that of the Utah newspapers (.46). This is indicated by centroid values on Function 1, the Comprehension/Cohesion dimension. However, NYT/LAT writers use longer and more abstract words. They create longer sentences packed with more ideas, as indicated by Their longer mean sentence length and higher percentage of complex and compound-complex sentences. Yet this more complex style seems to be rated comprehensible and cohesive. This implies considerable writing skill. Large metropolitan newspapers such as The New York Times and The Los Angeles Times are able to pick and choose reporters who already have gained considerable experience and have demonstrated talent.

Differences among NYT/LAT, Wall Street Journal, and Utah newspaper styles also might be interpreted in terms of the amount of structure imposed by editors. A relatively

unstructured situation would result in diverse writing styles that express the reporters' personalities. In such an environment, skillful, experienced reporters would likely write comprehensible stories with a creative flair. The skill of such writers would allow them to express themselves with a greater density of ideas per sentence, resulting in longer, more complex sentences--the NYT/LAT style.

On the other hand, newspapers with a highly structured writing styles would differ greatly from those of the reporters' newspapers. The Wall Street Journal contains structured writing. Front-page Wall Street Journal features, such as those analyzed in the study, are formula pieces. Usually, they open with an anecdote about an individual or group that typifies the story's main idea. This is told in conversational easy-to-understand language. Four or five paragraphs into the story, the transition is made from the specific instance related in the opening anecdote to the general situation being reported. Detailed, well-researched information, presented in simple terms, carry the story to a satisfying, informative conclusion. This is an editor's medium in which form, based on policy, dictates content and structure.

Utah newspaper style may be formula writing of another kind, the inverted pyramid style. Opening sentences summarize the main ideas of the story. Supporting detail is then presented in order of decreasing importance. This describes a structured writing environment similar, yet different from

the Wall Street Journal situation. Still it is primarily an editor's, not a reporter's, medium.

A comparison of Associated Press (AP) or USA Today writing styles to those in this tudy would test the hypothesis of structured versus unstructured writing environments. Both AP and USA Today are structured media. AP staffers usually write summary leads and inverted-pyramid stories that can be cut from the bottom without losing vital information. USA Today writing represents an extreme summary-lead, inverted-pyramid structure coupled with conversational presentation and a severe limit on length. If a structured writing environment is a significant factor in discriminating between stories high and low in Creativeness/Complexity, AP and USA Today styles should plot closer to The Wall Street Journal than the NYT/LAT style. In summary, differences between styles of individual newspapers may result from a complex set of factors including:

1. Structural features related to length and complexity in the writing.
2. These, in turn, may depend on the degree to which structure is imposed on the writing by editors.

Conclusions

Additional research is needed using newly available computerized analytical tools such as Writer's Workbench. Literature discovered during this study also indicated that journalists need to seek opportunities for an interdisci-

plinary approach to understand writing style. Much valuable research related to journalism is being conducted in fields such as English, educational evaluation, and linguistics. As preliminary as the findings of this study must be regarded, they indicate that conventional wisdom about the value of simple words, short sentences, and readability scores may need to be reexamined.

Implications for journalism educators are many. Forcing students to learn a style that overemphasizes simplicity and brevity may retard development of a style more like that of experienced journalists. Also, the rich mix of variables underlying Comprehension/Cohesion suggest a need to better understand and develop skillful use of specific parts of speech such as articles, prepositions, conjunctions, and pronouns.

Journalists also should stay abreast of research stimulated by the interdisciplinary movement in text analysis. Work important to journalism teaching is being published in a range of journals. For example, some composition researchers are experimenting with sentence-combining exercises to develop skill in using pronouns and improve cohesion. Witte and Faigley (1981) described one such exercise:

> An open sentence-combining exercise about Charlie Chaplin might contain a series of sentences beginning with the name Charlie Chaplin. Such an exercise would, at the very least, demand that students change most of the occurrences of Charlie Chaplin to he in order to produce acceptable text. Students working either from contextual cues or from their knowledge of Chaplin might also use phrases like the comic genius or the little tramp to substitute for the proper name Chaplin (p. 201).

Analysis of student writing by computer programs such as Writer's Workbench, combined with the power of modern statistical analysis, promise development of powerful diagnostic tools. Resources seem to be available to identify specific ways in which student writing differs from writing of the same type that has been judged effective. With those differences identified, exercises could be developed to strengthen needed skills.

However, enthusiasm about the possibilities must be tempered by recognition that the writing process, extremely complex and little understood, will not yield its secrets easily. Lynch (1970, p. 326) cited one study that identified 39 aspects of style and another that defined 37 variables and four judgmental factors. Lynch's own work described style with four dimensions and a dozen underlying indexes. No simple description is available or is likely to be developed.

Witte and Faigley (1981, p. 202) concluded their study of cohesion in student writing by admitting that narrow emphasis on that aspect of composition probably would not improve freshman essays. "Just as exclusive focus on syntax and other formal surface features in writing instruction probably will not improve the overall quality of college students' writing, neither will a narrow emphasis on cohesion probably produce significantly improved writing," they wrote. It may be that attention to even a wide range of the skills involved in writing will have little impact on desired

results. Writing may be so broad and complex a mix of physiological and psychological behaviors that it resists comprehensive analysis.

However, new computerized tools provide previously unavailable resources with which to attempt the task. They should be used.

ENDNOTES

Alexander, G.A., "Computer Aids for Authors and Editors: A Natural Extension of Word Processing?" The Seybold Report, 13:1-18 (Feb. 13, 1984).

Burgoon, J.K., M. Burgoon, and M. Wilkinson, "Writing Style as Predictor of Newspaper Readership, Satisfaction, and Image," Journalism Quarterly, 58:225-231 (1981).

Cooper, C.R., R. Cherry, B. Copley, S. Fleischer, R. Pollard, and Sartisky, "Studying the Writing Abilities of a University Freshman Class: Strategies from a Case Study, New Directions in Composition Research, New York: The Guilford Press (1984).

Cherry, L., "Writing Tools," IEEE Transactions on Communications, COM-30:100-105 (1982).

Kessler, L. and D. McDonald, When Words Collide: A Journalist's Guide to Grammar and Style, Belmont, Calif.: Wadsworth Publishing Co. (1984).

Klecka, W.R., "Discriminant Analysis," Statistical Package for the Social Sciences, in N. H. Nie, et al., New York: McGraw-Hill Book Company, pp.434-467 (1975).

Lynch, M.D., "Stylistic Analysis," in P. Emmert and H. Brooks, eds., Methods of Research in Communication, Boston: Houghton Mifflin, pp. 315-342 (1970a).

Lynch, M.D. and D.L. Bowman, "A Correlate Measure of Creativeness," unpublished paper, University of Missouri, 1967, cited in P. Emmert and W. Brooks, eds., Methods of Research in Communication, Boston: Houghton Mifflin, p. 325 (1970b).

Lynch, M.D. and M.K. Collier, "The Meaning of Creativeness," unpublished paper, University of Missouri, 1966, cited in P. Emmert and W. Brooks, eds., Methods of Research in Communication, Boston: Houghton Mifflin, p. 325 (1970c).

Lynch, M.D., B.D. Kent, and R.P. Carlson, "The Meaning of Human Interest," Journalism Quarterly, 44:673-678 (1967).

Lynch, M.D., H.M. Nettleship, and R.P. Carlson, "The Measurement of Human Interest," Journalism Quarterly, 45: 226-234 (1968).

Powell, K.B., "Readability Formulas:Used or Abused?" IEEE Transactions on Professional Communication, PC-24: 43-45 (1981).

Ruffner, M., "An Empirical Approach for the Assessment of Journalistic Writing," Journalism Quarterly, 58:77-82 (1981).

Witte, S.P. and L. Faigley, "Coherence, Cohesion, and Writing Quality," College Composition and Communication, 32: 189-204 (1981).

SELECTED BIBLIOGRAPHY

Alexander, G.A., "Computer Aids for Authors and Editors: A Natural Extension of Word Processing?" The Seybold Report, 13:1-18 (Feb. 13, 1984).

Bittner, J.P. and W.G. Shamo, "Readability of the 'Mini Page'," Journalism Quarterly, 53:740-743 (1976).

Braddock, R., "The Frequency and Placement of Topic Sentences in Expository Prose," Research in the Teaching of English, 8: 287-302 (1974).

Burgoon, J.K., M. Burgoon, and M. Wilkinson, "Writing Style as Predictor of Newspaper Readership, Satisfaction and Image," Journalism Quarterly, 58:225-231 (1981).

Cherry, L., "Writing Tools," IEEE Transactions on Communications, COM-30, 1:100-105 (1982).

Coleman, M. and T.L. Liau, "A Computer Readability Formula Designed for Machine Scoring," Journal of Applied Psychology, 60:283-284 (1975).

Cooper, C.R., "Procedures for Describing Written Texts," in P. Mosenthal, L. Tamor, and S.A. Walmsley, Research on Writing: Principles and Methods, New York: Longman, pp. 287-313 (1983).

Dale, E. and J. Chall, "A Formula for Predicting Readability," Educational Research Bulletin, 27:11-20 (1948).

Fisk, M., "Comparing Journalistic and Literary English," Journalism Quarterly, 10:202-208 (1933).

Flesch, R.F., The Art of Plain Talk, New York: Harpers (1946).

Flesch, R.F., "A New Readability Yardstick," Journal of Applied Psychology, 32:221-233 (1948).

Flesch, R.F., The Art of Clear Thinking, New York: Harpers (1951).

Flesch, R.F., How to Write, Speak and Think More Effectively, New York: Harper and Brothers (1960).

Frase, L.T., "The UNIX Writer's Workbench Software: Philosophy, The Bell System Technical Journal, 62:1883-1890 (1983).

Fry, E.B., "A Readability Formula That Saves Times, Journal of Reading, 11 (7):513-516 (1968).

Gray, W.S. and B.E. Leary, What Makes a Book Readable, Chicago: University of Chicago Press (1935).

Gunning, R., The Techniques of Clear Writing, New York: McGraw-Hill (1952).

Halliday, M.A.K. and R. Hasan, Cohesion in English, London: Longman (1976).

Hoskins, R.L., "A Readability Study of AP and UPI Wire Copy," Journalism Quarterly, 41:214-217 (1973).

Kachigan, S.K., Multivariate Statistical Analysis: A Conceptual Introduction, New York: Radius Press (1982).

Kent, B.D., Human Interest: Its Meaning and Measurement, unpublished Master's Thesis, University of Missouri, Columbia, 1966, cited in M.D. Lynch, H.M. Nettleship, and R.P. Carlson, "The Measurement of Human Interest," Journalism Quarterly, 45:227 (1968).

Kincaid, J.P., J.A. Aagard, J.W. O'Hara, and L.K. Cottrell, "Computer Readability Editing System, IEEE Transactions on Communications, PC 24:38-41 (1981).

Klecka, W.R., "Discriminant Analysis," Statistical Package for the Social Sciences, Nie, N.H., et al., New York: McGraw-Hill Book Company, pp. 434-467 (1975).

Labov, W., Language in the Inner City: Studies in the Black English Vernacular, Philadelphia: University of Pennsylvania Press (1972).

Larson, R.L., "Sentences in Action: A Technique for Analyzing Paragraphs," College Composition and Communication, 18:16-22 (1967).

Lynch, M.D., "Stylistic Analysis," in P. Emmert and H. Brooks, eds., Methods of Research in Communication, Boston: Houghton Mifflin, pp. 315-342 (1970a).

Lynch, M.D. and D.L. Bowman, "A Correlate Measure of Creativeness," unpublished paper,University of Missouri, 1967, cited in P. Emmert and W. Brooks, eds., Methods of Research in Communication, Boston: Houghton Mifflin, p. 325 (1970b).

Lynch, M.D. and M.K. Collier, "The Meaning of Creativeness," unpublished paper, University of Missouri, 1966, cited in P. Emmert and W. Brooks, eds., Methods of Research in Communication, Boston: Houghton Mifflin, p. 325 (1970c).

Lynch, M.D., B.D. Kent, and R.P. Carlson, "The Meaning of Human Interest," Journalism Quarterly, 44:673-678 (1967).

Lynch, M.D., H.M. Nettleship, and R.P. Carlson, "The Measurement of Human Interest," Journalism Quarterly, 45:226-234 (1968).

MacDonald, N.H., L.T. Frae, P.S. Gingrich, and S.A. Keenan, "The Writer's Workbench: Computer Aids for Text Analysis, IEEE Transactions on Communications, COM-30:105-109 (1982).

Matsuhaashi, A. "Pausing and Planning: The Tempo of Written Discourse Production," Research in the Teaching of English, 15:113-134 (1981).

McLaughlin, G.H., "Smog Grading -- A New Readability Formula," Journal of Reading, May: 639-646 (1969).

McLaughlin, M.L., "Discriminant ANalysis in Communication Research," Multivariate Techniques in Human Communication Research, P.R. Monge and J.N. Capella, eds., New York: Academic Press, p. 188 (1980).

Meade, R.A. and W.G. Ellis, "Paragraph Development in the Modern Age of Rhetoric," English Journal, 59:219-226 (1970).

Mednick, M.T., S.A. Mednick, and C.C. Jung, "Continual Association as a Function of Level of Creativity and Type of Verbal Stimulus," Journal of Abnormal and Social Psychology, 69:84-88 (1964).

Moznette, J. and G. Rarick, "Which Are More Readable: Editorials or News Stories?" Journalism Quarterly, 45:319:21 (1968).

Mosteller, F. and D.L. Wallace, "Inference in an Authorship Problem: A Comparative Study of Discrimination Methods Applied to the Authorship of The Federalist Papers," Journal of the American Statistical Association, 58: 275-309 (1963).

Nafziger, R.O., M. MacLean, Jr., and W. Engstrom, "Useful Tools for Interpreting Newspaper Readership Data," Journalism Quarterly, 28:441-456 (1951).

Nettleship, H.H., Some Correlates of the HQdex, Master's Thesis, University of Missouri, Columbia, 1967, cited in M.D. Lynch, H.M. Nettleship, and R.P. Carlson, "The Measurement of Human Interest," Journalism Quarterly, 45:231 (1968).

O'Donnell, B. "Stephen Cranes' The O'Ruddy: A Problem in Authorship Discrimination," in The Computer and Literary Style, Jacob Leed, ed., Kent, Ohio: Kent State University Press (1966).

Porter, W.C., Readability of News Stories in the Worchester Telegram, unpublished study (1982).

Powell, K.B., "Readability Formulas:Used or Abused?" IEEE Transactions on Professional Communication, PC-24: 43-46 (1981).

Razik, T.A., "A Study of Amreican Newspaper Readability," Journal of Communication, 19:317-324 (1969).

Rochester, S.R. and J.R. Martin, Crazy Talk: A Study of the Discourse of Schizophrenic Speakers, New York: Plenum (1979).

Ruffner, M. "An Empirical Approach for the Assessment of Journalistic Writing," Journalism Quarterly, 58:77-82 (1981).

Smith, E.A. and P. Kincaid, "Derivation and Validation of the Automated Readability Index for Use with Technical Materials," Human Factors, 12:457-464 (1970).

Stevens, K.C., "Readability Formulae and McCall-Crabbs Standard Test Lessons in Reading," The Reading Teacher, Jan.: 413-415 (1980).

Tannenbaum, P.H. and M.D. Lynch, "Sensationalism: The Concept and Its Measurement," Journalism Quarterly, 37:381-391 (1960).

Tannenbaum, P.H. and M.D. Lynch, "Sensationalism: Some Objective Message Correlates," Journalism Quarterly, 39:317-323 (1961).

Tucker, R.K., R.L. Weaver, and C.B. Berryman-Fink, Research in Speech Communication, Englewood Cliffs, N.J.: Prentice-Hall, Inc. (1981).

Ward, W.J., The Nature of News in Three Dimensions, School of Journalism and Broadcasting, Oklahoma State University, Stillwater, Oklahoma, Journalistic Services (1973).

Whaler, J., Counterpoint and Symbol: An Inquiry into The Rhythm of Milton's Epic Style, Copenhagen: Rosenkilde: 1956, cited in The Computer and Literary Style, Jacob Leed, ed., Kent, Ohio: Kent State University Press, p. 13 (1966).

Winterowd, W.R., "The Grammar of Coherence," College English, 21:828-835 (1970).

Witte, S.P. and L. Faigley, "Coherence, Cohesion, and Writing Quality," College Composition and Communication, 32: 189-204 (1981).

Yule, G.U., The Statistical Study of Literary Vocabulary, Cambridge: Cambridge University Press (1944).

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