A COMPARISON OF RECALL BY UNIVERSITY BIBLE STUDENTS
AFTER DISCUSSION AND AFTER SELF-STUDY

DISSERTATION

Presented to the Graduate Council of the
North Texas State University in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Johnny Harold Stovall, B.A., M.A., M.A.
Denton, Texas
May, 1987
Stovall, Johnny H., A Comparison of Recall by University Bible Students After Discussion and After Self-Study. Doctor of Philosophy (College Teaching), May 1987, 183 pp., 6 tables, references, 121 titles.

Recall of expository prose after one of two learning techniques was determined. Pearson correlation did not discover a significant difference between the recall writings of the examinees who studied by discussion and those who studied by underlining. The significance of the difference between two proportions found that the group which underlined recalled significantly better than the group which discussed what they had read. This highly significant difference was almost identical when all synonyms from the Turbo Lightning computer program were considered correct recall and analyzed by the significance of the difference between two proportions.

A majority of the examinees said that they could recall more of the text if they discussed it rather than underlined it, although there was no evidence found to support this attitude.

There was not a significant difference between the material studied and the recall writings of all examinees.
There was a highly significant difference between the Standard Corpus of Present-Day Edited American English and the recall writings of all examinees. This lack of a significant difference between recall writings compared with the material studied versus the highly significant difference between recall writings compared with normal English usage demonstrated real recall by examinees.

Quester Incorporated did a factor analysis of the recall writings of each examinee. As a result of this examination, they found the highest normative scores in fifteen years of analyzing documents containing either the speech or the writings of thousands of people. According to Quester and the researcher, this is an indication that academic Bible classes contribute to an important and otherwise underemphasized area of a person's education.
### TABLE OF CONTENTS

**LIST OF TABLES** .............................................................. vii

**Chapter**

I. **INTRODUCTION** ............................................................. 1

  - Statement Of The Problem
  - Purposes Of The Study
  - Hypotheses
  - Definition of Terms
  - Background And Significance
  - Limitations of The Study
  - Pilot Studies
  - Basic Assumptions

II. **REVIEW OF RELATED LITERATURE** ................................. 21

  - Overview
  - Multidimensional Scaling
  - Cognitive Maps
  - Relationship Between Visual and Verbal
  - Previous Discussion and Underlining Studies

III. **PROCEDURES OF THE STUDY** ........................................ 61

  - Pilot Studies
  - Procedure for Selecting Examinees
  - Description Of the Examinees
  - Procedures for Administering the Study
  - Research Design
  - Procedures for Analysis of Hypothesis One
    - Pearson Correlation for Hypothesis One
    - Procedures to Calculate Recall Volume
    - Proportion of Significant Proportions for Exact Recall
    - Proportion of Significant Proportions for Recalled Synonyms
  - Procedures for Analysis of Hypothesis Two
  - Procedures for Analysis of Hypothesis Three
  - Quester Factor Analysis Pertinent to
TABLE OF CONTENTS -- Continued

Hypothesis Three
Procedures for Analysis of Relationship Between Graduate Accreditation and Recall
Procedures for Analysis of Relationship Between Socio-Economic Status and Recall
Reliability and Validity of the Significance of the Difference Between Two Proportions
Summary

IV. RESULTS ........................................ 88

Analysis of Purpose
Analysis of Examinees
Results Pertinent To Hypothesis One
   Recall Volume Pertinent to Hypothesis One
   Results of the Exact Recall Proportion of Significant Proportions Pertinent to Hypothesis One
   Results of the Recall of Synonyms Pertinent to Hypothesis One
Results Pertinent To Hypothesis Two
Results Pertinent To Hypothesis Three
   Results Pertinent To Hypothesis Three Using Quester Categories
   Quester Factor Analysis Pertinent to Hypothesis Three
Contrast of Examinees from Institutions With and Without Graduate Degrees
Contrast of Examinees Above and Below the Socio-Economic Mean
Reliability Conclusion
Additional Survey Data
Summary

V. CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS ... 107

Introduction
Conclusions and Discussion
Recommendations for Further Study
Implications

APPENDICES ........................................... 133

A. Turbo Pascal Program to Randomly Choose Participants in the Study ............... 134
TABLE OF CONTENTS -- Continued

B. Letter to the Department of Biblical Studies . . . 137
C. Instructions to Students . . . . . . . . . . . .140
D. Student Recommendations for Academic Bible Study . 143
E. The Material Studied: Colossians Chapters 2 & 3 . 150
F. Original Lexical Items with Discussion . . . . . .156
G. Original Lexical Items with Underlining Group
   Synonyms. . . . . . . . . . . . . . . . . . . . .164
H. Words Recalled in Incorrect Proportions by Low
   Socio-economic Group . . . . . . . . . . . . .172

REFERENCES . . . . . . . . . . . . . . . . . . . . . .176
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Characteristics of Participating Institution</td>
<td>64</td>
</tr>
<tr>
<td>II. Pearson Product Moment Correlation on the Weighted Usage Proportion</td>
<td>89</td>
</tr>
<tr>
<td>III. Proportion of Significant Proportions for Exact Recall</td>
<td>91</td>
</tr>
<tr>
<td>IV. Proportion of Significant Proportions for Synonyms</td>
<td>94</td>
</tr>
<tr>
<td>V. Learning Technique Preferences</td>
<td>95</td>
</tr>
<tr>
<td>VI. Proportion of Significant Proportions</td>
<td>96</td>
</tr>
</tbody>
</table>
CHAPTER I

Introduction

One of the major factors which has contributed to our present health, wealth, and happiness is education. Those countries having a high degree of education and exposure to a multiplicity of facts are those which are self-sufficient in terms of food production and which manufacture the most goods. In other words, they have the greatest gross national product. America has for many years been a leader in education (Coomes, 1968; Hughes and Lancelot, 1946; Cramer and Brown, 1965). One indicator of this leadership of the American educational system is that The Institute of International Education (1964) reports the number of foreign students studying in America is greater than the number of American students studying abroad.

From its beginning, a strength of the American educational system has been related to the teaching of the Bible (Ehlers and Lee, 1964; Cramer and Brown, 1965). In 1647, Massachusetts passed a law which required every community with more than fifty families to establish a school so its citizens could learn to read the Bible. The Massachusetts State Archives has the original copy and a printed transcription with superscripts added by Nathaniel
Shurtleff. The superscripts are enclosed in parentheses in the following quotation.

It being one cheife piecet of y(t) ould deluder, Satan, to keepe men from the knowledge of y(e) Scriptures, as in form(r) times by keeping y(m) in an unknown tongue, so in these latt(r) times by psawing from y(e) use of tongues, y(t) so at least y(e) true sence & meaning of y(e) orignall might be clouded by false glosses of saint seeming deceivers, y(t) learning may not be buried in y(e) grave of o(r) fath(rs) in y(e) church & comonwealth, the Lord assisting o(r) endeavo(r)s,--.

It is therefore ord(r)ed, y(t) ev(r)y towneship in this jurisdiction, aft(r) y(e) Lord hath in-creased y(m) to y(e) number of 50 household(rs), shall then forthw(th) appoint one w(th)in their towne to teach all such children as shall resort to him to write & reade, whose wages shall be paid eith(r) by y(e) parents or mast(rs) of such children, or by y(e) inhabitants in gen(r)all, by way of supply, as y(e) maior pt of those y(t) ord(r) y(e) prudentials of y(e) towne shall ap-point; pvided, those y(t) send their children be not oppressed by paying much more y(n) they can have y(m) taught for in oth(r) townes; & it is furth(r) ordered, y(t) where any towne shall in-crease to y(e) numb(r) of 100 families or house-hould(rs), they shall set up a gramer schoole, y(e) m(r) thereof being able to instruct youth so farr as they may be fited for y(e) univer-sity, pvided, y(t) if any towne neglect y(e) pformance hereof above one yeare, y(t) every such towne shall pay 5(§) to y(e) next schoole till they shall pforme this order. (p. 1)

The great educational strength of America is built neither on a single educational philosophy nor on an accu-mulation of facts from only one area (Hughes and Lancelot, 1946; Cramer and Brown, 1965). In Europe, only the brilli-ant students are able to obtain a liberal arts educa-tion. Those unable to score high enough on achievement
tests administered before and during the high school years are routed to technical-vocational schools (Cramer and Brown, 1965; Coomes, 1968; Belding, 1966). They are not able to enjoy the widespread dissemination of a liberal education, which Americans enjoy. Such is the case not only in Europe, but in most countries of the world.

The liberal education in America spans the gamut from mythologies and histories of every country in the world to the minute details of the sciences. Some universities and high schools teach vocational classes. In fact, some authorities feel that liberal education is anything one learns which enables one to more fully appreciate the world. It is evident that courses in art, drama, and music appreciation taught in many liberal arts colleges are not specifically designed to enable a person to work in a particular occupation or make them believe a certain way. The purpose of these courses is to disseminate information concerning art and music forms, enhancing each student's appreciation of his or her surroundings.

**Statement Of The Problem**

This study concerns content recall by university Bible students after either discussion or self-study using underlining.

**Purposes Of The Study**

The purposes of this study were threefold:
1. To determine whether discussion or self-study would best enable students to recall studied material as measured by the Pearson product moment correlation between weighted usage proportions in the writings of the students correlated with the weighted usage proportions in the material studied, or by a dual application of the test of the significance of the difference between two proportions.

2. To determine if students would say they recall more of the material after studying by underlining or after studying by discussion.

3. To add information to dissertations, such as Greene (1974), about the extent and type of learning in religious education and Bible classes at the college level.

Hypotheses

To carry out the purposes of the study the following hypotheses were tested:

1. When asked to write major concepts in the study material, the weighted usage proportion of words in the writings of the students who study by underlining will be closer to the weighted usage proportion of words in the original when compared to the weighted usage proportion of words used by those who studied by discussion.
2. Both groups of students will say that they can write more of the major concepts after underlining rather than after discussion.

3. The proportion of significant proportions obtained between all writings of all examinees and the material studied will be larger than the proportion of significant proportions between all writings of all examinees and the Brown University Corpus of Present-Day Edited American English.

Definition of Terms

The following terms have conceptually restricted or technical meanings.

Academic is restricted to first learning materials containing known facts followed by the encouragement of higher level cognitive processing of this material for educational rather than for emotional or devotional purposes.

Corpus or The Standard Corpus of Present-Day Edited American English is a body of 1,014,232 words in computer-readable format assembled from 500 samples of approximately 2,000 words by researchers at Brown University between 1963 and 1964.

Dictionary entries for the purpose of this study are defined as any stream of characters ending in a space, double quotation marks, a period, a question mark, an exclamation mark, a colon, or a semicolon in the material
studied. Thus "bodies," "body," "2," and "3" are four separate dictionary entries in this study just as they are in the frequency analyses contained within the Brown University Standard Corpus of Present-Day Edited American English.

Learning is any one of a multitude of neurological or cognitive changes in organisms, ranging from conditioning to high-level cognitive thought. The primary use of learning in this dissertation refers to cognitive results that are at least as complex and beneficial as the learning of the alphabet. Learning the alphabet may be considered as nothing more than recall. But this recall is required by the teacher because recall of the alphabet makes it much easier for the student to use dictionaries, encyclopedias and other reference materials arranged in alphabetical order.

Proportion of significant proportions is defined as the proportion of dictionary entries significant at the .05 level determined by the test of the significance of the difference between two proportions. In this study, the proportion that a word occurs in the writings of students is generally compared to the proportion of the same word in the Standard Corpus of Present-Day Edited American English.

Weighted usage proportion is defined as the percentage of occurrence of a dictionary item divided by the
percentage of this dictionary item in the \textit{Standard Corpus of Present-Day Edited American English}.

\textbf{Background and Significance of this Study}

A perplexing issue for educators over the last several years has been the measurement of a reader's response to literature. The controversy centers upon the question of the meaningfulness of data not described in behavioral terms. Measurement procedures and research strategies are being developed and applied on a broad scale to artistic creations in music, art, and literature, despite the controversy according to Berlyne (1974) and Lindauer (1974).

Philip Stone was the director of the project which produced the \textit{Harvard General Inquirer}. This computer program was used extensively at Harvard, Massachusetts Institute of Technology, the University of Michigan, and other universities with prestigious departments of computer science and social science during the 1960s and 1970s, to do content analysis. \textit{The Harvard General Inquirer} is still being used at Dartmouth and other places. According to Professor Stone (1986), the company making the greatest strides in solving this problem is the Quester Company. Although a portion of the Quester company program is built on the \textit{Harvard General Inquirer}, the major decision-making portion of the Quester program is a closely guarded commercial secret which operates on the
basis of complex computerized statistics. These statistics are based on a proprietary one billion six hundred million word data base of currently spoken as well as written American English. In addition, since Quester has been doing statistical analyses of attitudes since 1977, Quester has accumulated a large data base of expected frequencies which are peculiar to attitudinal analysis by these types of statistics and the active listening procedures used by Quester.

One law firm was on its way to losing the vast majority of cases in a nationwide class action suit. Quester started sitting in the courtroom and determining which jurors had the attitudes necessary for this firm to win. Out of the next similar seven cases, they won six of them.

The banking industry had been stating that new laws made it possible for them to "pay interest on checking." When Quester researched the attitudinal differences between bankers and bank customers, they advised the bank to say, "You can earn interest on your checking account."

Hallmark cards has a history of making a good profit on just a few well-chosen words, but they found that they did better when they let Quester tell them how to write cards from men to women in a way which really reflected how men usually write.

Since Quester works with every available utterance even when the amount of data is massive, this system was
also able to help a company determine the main points when they received fifty thousand pages of memos concerning what was wrong with that company.

According to a 1985 February 13 article in the Wall Street Journal, Charles Cleveland "has built Quester into a $2.5 million-a-year business, with blue-chip customers paying $50,000 to $100,000 a pop for his advice" (p. 1). The proprietary formulas and massive data bases of Quester have enabled them to prove that variation in the percentage of word usage does provide what they call an "attitude score," which is a highly reliable index into the emotions and understanding of people.

This study used a technique somewhat similar to the technique used by Quester before they developed their proprietary data bases and refined formulas incorporating those data bases. The technique is similar because the percentage of observed words minus the percentage of expected words is at the heart of the statistical formula. The technique is different because Quester is primarily concerned with measuring attitudes and/or emotions. The context for a Quester study is usually a business wanting to know how people feel about various aspects of their advertising. In the usual Quester context, the business wants to conform to the attitudes of the clients. In this study, however, there is an external standard. This study seeks to determine if the memories of the examinees using
one learning technique will conform to the studied material better than the memories of the other group of examinees. The techniques of this study are therefore different from the usual Quester techniques because statistical techniques for comparing performance against a standard have been chosen rather than using statistical techniques for comparing attitudes to a norm in a survey environment.

The development of a test which measures communications to determine wherein two messages are different would be extremely valuable. The Bible has been translated from Hebrew and Greek into English and into many other languages. In many children's books, the Bible has also been translated into pictures or illustrations. Some motion pictures have translated the Bible into film. There are greater differences among movie versions, interpretations, paraphrases, and teaching materials than there are among various translations of the Bible. There is a big difference between the same message told two different ways and two entirely different messages. Matthew, Mark, Luke, and John tell the same major message, the life story of Jesus Christ. This is an example of essentially the same message being told in more than one way. There are other religious groups which do not claim to be Bible-based but who tell their message in language
that sounds almost like that of Matthew, Mark, Luke, or John.

This dissertation does not attempt to develop an all-inclusive test for determining whether two messages are the same or entirely different. This dissertation deals with the development and administration of a test which is specific to certain factors occurring in communicated materials. This test could be used for determining if two pieces of material communicate the same themes. In those portions of the Bible which give parallel accounts or are written to accomplish the same purpose, the Bible agrees with itself in terms of these tests only when these tests are run on parallel passages. One example tested by the researcher was a portion of the book of Colossians, in the Bible, which speaks of new life in Christ after dying to sin and being buried in baptism as compared to the portion in Romans which also speaks of dying to sin, being buried in baptism, and then being raised to walk in newness of life. Some passages which speak of events in the life of Jesus will agree with passages in other books which tell of the same event. But there are places in the Bible where one writer is explaining one aspect of an event and another writer has explained another aspect of the same event and it is impossible to tell by the tests used in this dissertation that the same event is being explained because entirely different aspects are being explained.
An example of this on an amount of data that is too small for the tests used in this dissertation is Matthew 28:19-20, as compared with Luke 24:47-48.

It is expected that learning techniques studied in this dissertation result in the learner being able to write or retell the story of the Bible in a way that correlates highly with the same factors found in portions of the Bible. These learning techniques teach the Bible in an academic way to a greater extent than other learning techniques. Other methods might encourage the students to ignore the major factors which are prevalent in that portion of the Bible they have purported to be learning.

The value of this dissertation goes beyond religious or biblical education because of the following question. How can we be sure what is recalled is the material which students have purported to study? More explicitly, what tests are valid and reliable measures that students have mastered the material they were to have learned?

Kenneth L. Pike (Pike and Erickson, 1963) showed that it is possible to place utterances into a matrix of subject, verb and object for each phrase. These can then be analyzed by matrix transformations which are commonly used in mathematics. The application of mathematical formulas or computer programs performing matrix algebra can even calculate the conclusion of complex or convoluted paragraphs (Pike and Lowe, 1969). The encoding of subject,
verb, and object and application of similar matrix procedures were used in order to identify major factors in the materials students studied.

A major purpose of education is to disseminate information which will enable those who are educated to contribute to the rest of society. Those who are educated are better equipped to function in society. They are better able to serve the community and the companies for which they work.

The major purpose of American education is not to test people so that some might receive degrees and honors superior to those received by others; nevertheless, testing is an important part of education. Testing enables educational institutions to determine how education should be administered so that it might be of a higher quality. Testing is a mechanism whereby the community acknowledges people who receive the highest honors as those who are most apt to have the greatest capability of serving that community, business, or any other entity.

It is unfortunate that perfect tests are not available to demonstrate with certainty what the ability of a student is to serve the community or business or, also, to show performance that is commensurate with degrees and courses completed by the student. Some methods of testing lend themselves to quantifiable numbers while other techniques do not.
Some Bible translators have realized that translation of the Bible extends beyond and encompasses many more important cognitive aspects than simply taking the words in scripture and putting them back into the words of a different language. The bottom line of the introduction to the *Simple English Bible* (International Bible Publishers, 1981) states that, "achieving understanding of scripture is a worthy goal, but a far more important aim is to apply what we learn from scripture to our daily lives. That is the ultimate translation!"

Part of the purpose of this dissertation is to give teachers and students of the Bible a gauge by which to measure the concepts they have against the concepts presented in the Bible. This is done through a statistical means. It will make possible the measuring of different educational techniques to determine which technique enables the student to develop most quickly and accurately a recall of the concepts presented in the Bible.

This dissertation has importance not only in terms of what a student might learn, but it is of significance because of the information it gives to a teacher concerning the learning style of students. Consequently, the teacher is not limited to a verbal basis for evaluating the student's level of understanding. It is also significant because it enables both teacher and student to have a visualization in addition to a verbalization of the concepts.
presented in expository prose. The same principles could be applied to the Bible, a computer manual, or other literature.

Some schools have not taught the Bible as an academic subject. The Supreme Court has ruled in Abington versus Schemmp (1963) that the Bible cannot be taught devotionally, from a denominational or sectarian position. The major areas in which the Bible has been taught throughout the world's history have been in public places, congregations, and homes. One public place in which the Bible has been taught is schools. Acts, the nineteenth chapter of the Bible, states that Paul taught in the school at Tyrannus for two whole years. The next sentence says that, "... the whole of Asia heard the Word" (Acts 19:9-10). Not everyone chose to become a follower of the words that Paul was teaching. This educational endeavor presented the whole of Asia with an opportunity to make a decision about what was being taught. This exposed them to a philosophy which has influenced Western civilization more than any other philosophy. Through this incident, Paul seemed to have learned the value of teaching others to be teachers. He instructed, in First Timothy, that the things learned and seen in him teach faithful men to teach others (2 Timothy 2:2). One purpose of this study was to determine if improvements could be made in the academic teaching of the Bible.
This dissertation deals with an important aspect of Western Civilization: the teaching of the Bible. The dissertation could have focused on the Bible as it is now taught in various universities or high schools. Instead, it concentrated on the teaching of the Bible in a sample of the North Central Texas population currently studying the Bible in an institution of higher education.

Since the Supreme Court ruling that the Bible may be taught in the public schools from an academic standpoint and not from a devotional or sectarian standpoint, a need has arisen for a multitude of studies to determine what methods of teaching are academic rather than emotional. It would be extremely valuable to have measurements to ascertain whether or not a class purporting to be studying any subject from a truly academic standpoint is doing that or merely receiving the opinions of the instructor and playing on the emotions of the students.

One of the major issues in higher education today is access versus quality of the program. A means of determining the quality of the program would enable researchers to hold that variable constant and determine the effect of various access policies on the quality.

Limitations Of The Study

This study was limited to college students attending religious education classes at various North Central Texas colleges and universities. This group may have had more
knowledge of the Bible than the general population. This could adversely effect the study if they responded on the basis of long-term memory rather than what they had just learned during the study. The reason for choosing a procedure with such a limitation was because most Bible study groups are voluntary rather than compulsory and are composed of just this type of student.

Another limitation of this dissertation was that each observed word was not placed into its attitude group according to the context in which the word is used. For example, look in "yon Cassius has a lean and hungry look," should be grouped in the attitudes referring to a physical characteristic of an individual. "I look at the disk drive before I turn on the computer" is in a context which would dictate the necessity of putting "look" under the category of actions.

The questions which ask the examinees to say whether they think they could learn more using discussion or underlining assume that the examinees know enough about both techniques to answer the questions. Students in the discussion group who were not familiar with underlining were more likely to answer "discussion."

Pilot Studies

Before this study was proposed, the researcher did more than a dozen pretests. Most of these pretests were with individual volunteers who had a Bible background.
Pretests were also done with individuals who were paid because they were representative of people who either had almost no Bible background or almost no interest in the Bible. In the final stages of pretesting, two Sunday school classes of college age students were tested.

**Basic Assumptions**

The material selected for this study is complex and not frequently recited by any particular religious group. It was therefore assumed that this material is unlikely to cause an emotional block or to be in the long-term memory of many subjects.
CHAPTER REFERENCES


CHAPTER II

Review of Related Literature

Overview

Fifteen out of twenty-two previous studies have not found a significant superiority for self-study by underlining, according to Hartley, Bartlett, and Branthwaite (1980, p. 219). But previous comparisons between discussion and underlining have not used techniques which so closely parallel unbiased techniques for discovering attitudes. How other researchers have attempted to solve this perplexing problem of determining attitudes is explored before comparing other studies which compared the learning techniques related to discussion and underlining.

Multidimensional Scaling

Multidimensional scaling (MDS) is a computationally intensive procedure whereby a grid of distances between objects are analyzed to determine how many dimensions would be required to draw a map with all of the objects placed within an acceptable proportionate relationship to each other. The researcher supplies the computational device with a minimum acceptable stress threshold, a maximum number of dimensions in which to compute an answer, and a
grid of distances between objects. The computational
device determines if the distances between all objects can
be reconciled to an exact fit on one dimension. If not,
then all differences are attempted to be reconciled in
higher and higher dimensions. The computation will cease
if either the number of dimensions allowed by the
researcher are exhausted or else the computational device
finds an amount of improvement, also known as a reduction
in stress, which is less than that requested by the re-
searcher.

Other researchers have suggested MDS as a potentially
valuable literary investigative technique, though there
are few applications in the literature to date, according
to Russell and Lambert (1980, p. 277). Romney, Shepard,
and Nerlove (1972) discuss the limitations and applica-
tions of the procedure to diverse subject areas. A paper
by MacCullum (1974) describes its relationship to factor
analysis. The authors do not claim global applicability
of MDS to the literary experience. It is suggested that
these procedures can serve an important function identify-
ing dimensions used by students in processing information
from the complexity of human interaction typical of many
literary works. This has been reviewed by Wainer and Berg
(1972). Senior French majors used Violence and
Fulfillment dimensions in their perception of nine stories
by de Maupassant. Neither dimension was related to the students' liking of the stories. Rosenberg and Jones (1972) applied MDS procedures to literature in their investigation of the dimensional perspectives of Theodore Dreiser. They utilized the descriptive traits he applied to his female characterizations in *A Gallery of Women*. A dimension termed "Potency" by the authors was found to be largely consistent with Dreiser's personal history and involvement with women.

In a related study, changes made in the perceptual organization of the reader through study of an aesthetic work was addressed by Klein (1968). He suggested that MDS may adequately reflect a change in students' judgment of art works following a course in art appreciation or drawing. Hartley and Homa (1981) predicted that experience with examples of a particular style would yield greater classification accuracy for new examples of that style. A measure of conceptual structure, derived from multidimensionally scaled space, was found to be significantly correlated with transfer performance. They elaborated on the abstraction paradigm to monitor states of conceptual structure. After initial exposure, subjects with different levels of experience with each style rated a common set of paintings for similarity. The results were analyzed using a multidimensional scaling program (Kruskal, 1964; Shepard, 1962). Similarity judgments and scaling
analyses were also used to obtain objective measurements of the similarity relationships among the stimuli, since they were uncontrolled and naturally occurring. Thus, Hartley and Homa (1981) allowed for testing of relationships between the accuracy of a novel painting’s classification and various measurements derived from the similarity rating data. This information was used to help determine what aspects of the novel stimuli were most predictive of correct classification. A study by Neisser (1967) treated concepts of style as ill-defined categories for which membership was not determined by the mere presence of one or more attributes.

Ill-defined categories are usually composed of members that may have infinite variation, where commonalties are frequently difficult to verbalize. Such categories are more easily understood when compared with well-defined categories that have easily verbalized inclusion rules. Members of an ill-defined category are not related by such a simple, all-or-none rule, but are presumably perceived as grossly similar to each other. Research on learning style has shown that accuracy in classification precedes verbal descriptions of styles (Walk, Karusaitis, Lebwoitz, & Falbo 1971). This supports the assumption that stylistic categories are ill-defined. Additionally, an artist’s style can rarely be reduced entirely to features enabling perfect style classification of novel examples. Despite
differences in definition, we are all aware of styles as perceived global impressions retained after encountering various instances of an artist's work. The ability to distinguish styles has been demonstrated with poetry by Lindauer and Arcamore (1974), with handwriting by Indow, Kobayashi, and Dewa (1974), with music by Lehman (1957), and with painting (Tighe, 1968; Walk, 1967; Walk, Karusaitis, Lebowitz, and Falbo, 1971). Whether the stimuli are drawn from art, literature, or music, the task facing the investigator is to demonstrate that any changes in perceptual organization arise from the reading or study experience rather than any other source of influence present between pre-test and post-test stages of a design.

This concern has been met retrospectively by drawing attention to parallels between changes in configuration and changes the writer feels would likely follow from in-depth study and presentation of professorial perspectives. A number of MDS studies have tried to examine changes in perceptual structure over time and link those changes to intervening events (Jones and Young, 1972; Berg and Wainer, 1976). Of particular interest was a pronounced shift in student position towards that of the instructor within the spatial configuration as described by Wainer and Kaye (1974).

Russell and Lambert (1980) found applications of MDS procedures to textual material prior to 1980 were limited
to those of stimuli as descriptive traits in Rosenberg and Jones (1972), poems in Berg and Wainer (1976), and short stories in Wainer and Berg (1972). None had dealt with the reader's perceptual organization of characters within a work or changes in perceptual organization from an initially superficial familiarity to a stage following intensive study. The study by Russell and Lambert (1980) addressed this void using MDS procedures in a before/after design with Shakespeare's Othello, and in a post-test only condition with Conan Doyle's Sherlock Holmes' Adventures. Evaluative and Sophistication dimensions dominated solutions for both groups of judges. Important Demeanor and Sexuality dimensions were used by students in the pre-lecture stage. The authors only addressed how students perceive the characters within a work and do not establish how they were intended to be seen. It is suggested that with increased familiarity with a work, the order and distances among stimuli may change in ways consistent with lecture content.

Multidimensional scaling requires extensive and expensive use of highly sophisticated computer resources. Since the thinking of most people is limited to three dimensions, MDS has not been completely accepted by some scholars. MDS operates by calculating how much stress is in the model when there is only one dimension and how much stress decreases for each added dimension. When stress
decreases to a point where it is no longer significant, the computer stops running and reports the various levels of stress for each dimension. Squeezing an entity into fewer dimensions than required is especially stressful in terms of trying to learn everything about the entity, although much can be learned from a model with too few dimensions. To illustrate, think of a three dimensional body. If a steam roller ran over it and made it two dimensional, there would not be much learned either from or about it.

The concepts that can be learned from literature, especially from the Bible, definitely have more than two dimensions. For evidence of this, consider the fact that Bible study involves dimensions beyond semantics. As the following studies will show, semantics alone has more than two dimensions. In both psychology and anthropology, interest in investigations of semantic domains has increased since the late 1950's, according to Cole and Scribner (1974). This is chiefly attributed to Osgood and associates (1957) in psychology and to Pike (1963) in anthropology. Later, others (Romney, Shepard, and Nerlove 1972; Fillenbaum and Rapoport, 1971) applied multidimensional scaling to this task. This technique is sensitive to underlying regularities in a set of data. Thus, when applied to a set of terms in a semantic domain, these procedures can reveal significant aspects of underlying
structure (Romney, Shepard, & Nerlove 1972). This technique involves asking subjects to rate the semantic similarity in a set of terms within a semantic domain. MDS analysis can then produce from these ratings a spatial representation of semantic relationships between terms. Previous studies using MDS were either intracultural or bicultural (Romney, Shepard, and Nerlove 1972). One study included subjects from five English speaking ethnic groups (Takata 1974).

Herrmann and Raybeck (1981) employed MDS techniques to investigate semantic judgments in six language-cultures. Items used to represent a semantic domain were selected as the best translation of terms used in original investigations done in English (Rips, Shoben, and Smith 1973; Fillenbaum and Rapoport, 1971). Booklets were prepared in the native language using an instruction page and two sections of test stimuli. The two categories of stimuli used were animals and emotions. Half of the booklets began with the animal category and the other half with emotions. Subjects were asked to judge similarities between the exemplars heading a stimulus page and each of the comparison words listed in a column beneath it according to a four point scale, with 4 representing similar and 1 dissimilar. Analysis of data was performed by Carroll and Chang's (1970) Indscal program. It produced a spatial solution with a number of dimensions. As in
previous studies, two dimensions were deemed adequate in order to understand the most important concepts. Correlations for all 14 solutions indicated a satisfactory fit of data, ranging from .539 to .659 for Animals, and .589 to .654 for Emotions. Intracultural solutions agreed with the general configuration of exemplars. Results agree with previous findings and with each other across cultural boundaries. The MDS procedure appears sensitive enough to cultural contexts to reveal some meaningful intercultural differences and similarities.

In addition to dimensions involving semantics, the Bible has dimensions which deal with a person's happiness or satisfaction with life. These dimensions are so strong in the Bible that many adherents of it have endured great difficulties with a high degree of life satisfaction. The Bible itself admonishes Christians to count it all joy when they have trouble (James 1:2). The following studies indicate that there are several dimensions to life satisfaction. Research in gerontology has centered on the issue of life satisfaction. The Life Satisfaction Index A (Neugarten, Havinghurst, and Tobin 1961) is a widely used investigative instrument. It has been employed as a dependent variable in tests of activity and disengagement theories according to Bultena and Oyler in 1971 and Lemon, Bengtson, and Peterson in 1972 and in more general analyses of the correlates of life satisfaction according to
Edwards and Klemmack, 1973 and Larson, 1978. Knapp (1976) suggested the LSIA could be treated as a MDS measure. He found that by estimating separate multiple regression equations on each of the four dimensions of the LSIA, the estimated equations varied considerably in terms of both content of regressor sets and the fit of data. In the original, LSIA is said to have five components of life satisfaction: zest versus apathy; resolution and fortitude; congruence between desired and achieved goals; positive self-concept, and mood tone. All were assumed to have a common link to life satisfaction, though conceptually distinct. Adams (1969) found support for this through factor analysis. He reported that the initial factor, presumably life satisfaction, explained 34 percent of the variance in items. Subsequent factors explained substantially smaller portions of the variance, indicating that there was a single primary factor. To test the assumption of the five components, Adams performed a factor rotation which resulted in four clusters of items corresponding with mood tone, zest versus apathy, congruence, and resolution and fortitude. He found no cluster of items corresponding to the self-concept component. The MDS approach of Hoyt, Kaiser, Peters, and Babchuk (1980) was based on the specification of activity theory by Lemon, Bengtson, and Peterson (1972). He related role loss to life satisfaction. He hypothesized
that the effects of role loss are expected to vary across the dimensions of life satisfaction. He further theorized that higher levels of activity should be associated with higher levels of life satisfaction.

Cognitive Maps

If it is possible to transfer visual information with a high correlation to verbal information, there is likely to be a high probability of transferring verbal information into visual information. Toward this end, little work has been done in developing methods of communicating or teaching structural knowledge to students. The linear, sequential nature of lectures and texts presents first one idea, then another and another, without systematically detailing the structural relationships that exist between these ideas. Educators agree that this last step in conceptualizing is the one most often neglected.

The preceding discussion regarding MDS addressed various modes of perception. What people perceive as true may not be true, even when dealing with such concrete topics as a map of the world. In 1972, Ostapchuk observed that exploratory studies in geography had increasingly used "mental maps" which he called "geography of the human mind" (p. 1). The phrase "geography in the human mind" might have been more appropriate. Researchers have sought to identify repetitive factors found in human responses to being questioned about their orientation and environmental
knowledge, using various strategies in widely differing settings. It is felt, however, that environmental knowledge and orientation are more than the result of direct experience. Both verbal and nonverbal information complement direct experience, providing information about an area which would otherwise be unknown. Analysis of these types of communicated messages is part of a category of research that Brian R. Goodey (1968) termed "extra-environmental perception."

Prior to 1972, Ostapchuk found only three noteworthy studies which examined the geographic information presented by the media (Cole, J. P. and Whysall, P., 1968; Goodey, 1968, 1969). They found primary attention was given to the home area in a sample of news sources from three countries. Additionally, it was noted that distribution of international news was regionally disproportionate. Goodey found similar results in a review of American journalism. Further, printed American news sources presented a uniform regional emphasis in reporting international news. Conclusions to be drawn from these studies are that a large proportion of information concerned the home area. Europe, the U.S.S.R., and Asia were disproportionately represented. Availability of information was greater for Eurasia than for other areas outside of the home area.
These findings are relevant to the teaching of social studies and programs which address the importance of international understanding. Many high school juniors are required to take a course in American history which deals, in part, with the promotion of international understanding. The stated purpose of the course is to provide the student with a more comprehensive mental map of the international world. Since few high school students are presented with opportunities for world travel, this understanding and knowledge must be acquired from the processing of verbal and nonverbal information.

In Ostapchuk's study (1972), the results of the Chi Square Test for Independence were used to determine the presence or absence of regional consistencies. The Spearman Rank Order correlation formula was used to compare frequency hierarchies of place referent data. Rationale for the study was based on findings from a review of literature that there is an increasing concern with the development of world-minded citizens. This endeavor requires that students acquire a knowledge and understanding of the similarities and differences that characterize men living in diverse habitats. They should understand and recognize ethnocentrism, and objectively view the events in the international world. In short, they should acquire a global orientation. This development necessitates the acquisition of a cognitive map of the
global environment in which they live. This is the product of a combination of human "dimensional capacities" (Tolman, 1932).

An analysis of the content of all media sources in three countries showed predominant attention was given to the home area. J. P. Cole and P. Whysall (1968) reviewed the BBC evening newscasts, the front pages of Pravda, and the Eastern Daily News. Later, Brian R. Goodey (1968) reached similar conclusions in studies of Time and Rolling Stone magazines. An interesting line of inquiry arising from these was the distribution of attention given to areas outside the home area. In both, primary emphasis was given to Europe, including the U.S.S.R., and Asia. Similar areas of concentration were reported (Mason, 1971; Hart 1966; Markham, 1961).

The results of several studies indicate that people possess several means of associating countries of the world. Children tend to use a social context and adults a political one (Haddon, 1960; Hicks and Beyers, 1968; Robinson and Hefner, 1968). In a study by Watson (1969), the author states that man is quite reluctant to change his initial impressions of his surroundings in light of information to the contrary. As a consequence, man may try to reinforce those elements that support his preconceptions or attempt to alter the environment before
accepting it, thereby readjusting his expectations to agree with the physical realities.

Lowenthal and Prince (1969) found that British landscape manifests an upper class and rural bias of taste which is reflected in the emphasis on the old and rustic. Lowenthal (1965) described the "American Scene" as one in which size is equated with quality. The present is continually being sacrificed for the future according to Lowenthal (1968). Campbell (1968) gives importance to the study of individual and group personalities as an indispensible element in the study of geographic regions. This is due to the human values reflected in the landscape.

Yi Fu Tuan (1968) completed a report which was a comparative study of demonstrably evident differences in landscape tastes in the appearances of formal European gardens and those of seventeenth century China. Although both products of man, the former manifests the Judeo-Christian traditions which emphasize the prominence of man within the physical environment, while the latter reflects the Oriental need for harmony between man and nature. In a number of studies of hazard perception, investigators have found the view of hazards to be culturally determined and the perception of occurrence is not associated with frequency (Sims and Saarinen, 1969; Rooney, 1967; Kates, 1969; Burton and Kates, 1964).
There was the following assumption implicit in Ostapchuk's 1972 study. He stated, "the textbook narration of international affairs provided repetitious information about the world which was incorporated into a student's mental map of the world" (p. 35). Mental map is defined as the knowledge and geographic orientation possessed by an individual developed through experiences, including personal, cartographic, and graphic, plus verbal information.

In order to analyze texts for place referent data, each text was coded and a tally kept in two categories labeled regional and general. The former was further divided into Central-South America and the Caribbean, Europe and Sub-Saharan Africa, Asia, Canada, Australia, and the Pacific. A separate tally was kept for the United States of America. The time period addressed was post World War II. Two editions of each text were used. They were published between 1960-63 and 1967-70.

The conclusions drawn by Ostapchuk (1972) were that textbooks published within the 1960-1963 and 1967-1970 periods contained a common rank order of attention to the regions of the world which was relatively consistent with statistics. The results also showed that the regional and place emphasis provided by 1967-1970 textbook editions were only slightly different than 1960-1963 editions. The regional and place emphasis provided in the textbook
Goodey (1968) demonstrated that what people write shows their concept of the world. He did a study of mental maps. In order to show how a person conceptualizes the world, he took newspaper articles, radio broadcasts, and writings of students. He analyzed them concerning the frequencies of occurrences, or the proportional number of occurrences. This calculation was based on all the geographical locations mentioned in speech, writing, broadcasts, or samples of the publications. Other geographers have had students write instructions and draw maps. By this procedure, it was shown that a high correlation exists between the description given by a person in writing, and their concept of the area they have tried to map. Concepts are expressed in many ways. They may be represented as either verbal or visual information. For instance, verbal concepts can be represented or translated into visual concepts such as mental maps. How information is represented is a major factor affecting learning. Geography would be difficult if the information were verbal and there were not any visual representations of the data, such as maps or globes.

Bell (1981) has emphasized the need to establish internal connectedness of terms and concepts to be learned by
considering ways in which concepts in a knowledge domain are related to each other. Students' numerical judgments show the strength of relationships between concepts, providing insights into students' organization of conceptual knowledge. It follows that an instructor's relationship judgments should be useful in conveying structural information to students. Cognitive maps serve as a teaching tool that allows an instructor to communicate interrelatedness of ideas to students. An examination of the arrangement of ideas in an instructor's cognitive map, and differences in students' maps, can provide insights into the thought processes involved as idea-pairs judged for relationship. A cognitive map produced from an instructor's relationship judgments presents students with a graphic synopsis of structural interrelationships between ideas in the map. In-class discussions of an instructor's map (as well as student maps, if desired) can supply structural communication missing from traditional instruction. Discussions of cognitive maps not only give students practice in conceptualizing at the structural level, they also allow students to review their knowledge of individual ideas. Students need to understand each idea singly before they can consider interrelationships between ideas.

Diekhoff and Diekhoff (1982) proposed an instructional technique for developing cognitive maps. Once key concepts, terms, important events, persons, or ideas have
been selected from a knowledge domain, the instructor forms them into all possible pairs by constructing a matrix in which each cell represents one pair. Each pair is assigned a number from one to nine, with one representing no relationship between the members of the pair, and nine representing a very strong relationship. Two ideas are related if one of the ideas is discussed in terms of the other. The task of rating pairs of ideas for relationship is considerably easier than it may seem, as shown by the high degree of consistency which experts show in judgments made on repeated occasions. Once the instructor makes relationship judgments, they are converted to decimal form by dividing by ten (one becomes .1, two becomes .2, and so on). Finally, the instructor analyzes the set of judgments through principal components analysis as if the set of judgments were a correlation matrix. Principal components analysis is widely available in an easy-to-use form in statistical packages such as the Statistical Package for Social Sciences (Hull and Nie 1981). Essentially, this analysis translates relationship judgments into distances so that highly related ideas are close together and less related ideas are further apart. These distances are used for creating a graphic array of concept-points in space, called a "cognitive map," which captures the instructor's structural knowledge.
Support for the effectiveness of this instructional technique is not limited to positive student reactions. Diekhoff and Diekhoff (1982) found that test scores of undergraduate psychology students support the belief that it enhances students' understanding. In a review session following a lecture, one group of students discussed the instructor's cognitive map of concepts selected from the unit under study. Another group of students reviewed only definitions of those concepts and then watched a film. For a second unit of study, the groups were switched. Statistical analyses of scores from examinations covering both units of study indicated that cognitive map-guided review sessions:

1. enhanced students' subsequent essay test scores;
2. increased the reliability with which students generated their own relationship judgments; and
3. increased the similarity between students' relationship judgments and those of the instructor. The learning of material in prose passages is likely to be affected by the way in which an individual represents information during reception and retention.

**Relationship between Visual and Verbal**

Paivio (1971, 1975) has argued that information may be represented in either verbal form, image mode, or both. Additional discussion of fundamental modes of representation may be found in Kosslyn and Pomerantz (1977),
Anderson (1978), and Kieras (1978). Many studies have been done which deal with relationships between visual and verbal learning.

The second printing of the Computational Analysis of Present-Day American English (Kucera & Francis, 1967), which lists the frequency findings from the Standard Corpus of Present-Day Edited American English, states that over seventy-five institutions and individuals had purchased inexpensive computer-readable copies of the Corpus and were doing some type of research with it in the first three years after its availability to the public. Other researchers have concentrated on the relationship between visual and verbal information.

Denney and Thissen (1983) studied determinants of cognitive ability in a group of elderly male subjects. One hundred fifteen men between the ages of 50 and 93 were administered six cognitive tasks: a verbal intelligence subtest, a nonverbal intelligence subtest, two tests of concrete operations, one test of formal operations, and a problem-solving task. The obtained scores were factor analyzed. Two factors were obtained: a nonverbal performance factor and a verbal-reasoning factor. Regression analyses in which age, education, occupation, years since retirement, health status, activity level, and marital status were predictor variables were performed on the factor scores obtained for each factor. The nonverbal
performance factor is significantly predicted by age, while the verbal factor is significantly predicted by education. Other significant predictors were not found in either analysis. These results are consistent with Horn (1979), who found that verbal and nonverbal abilities may be determined by different antecedents. Given that different abilities may be determined by different antecedents and different antecedents may have different relationships to age, it is important to conceptualize adult cognitive development as multidimensional and multidirectional rather than as normative and unidirectional (Denney and Thissen, 1983). Several studies have found individual variation of imagery performance and have shown it affects the learning of a variety of tasks. For instance, Marks (1973) found that subjects who reported vivid images when asked to think about a series of objects were better at recalling the content of colored photographs than subjects who did not have color images. Ernest and Paivio (1971) showed that subjects who did well on spatial ability tasks were able to form images in response to noun stimuli more quickly than those of lower spatial ability. These studies have shown there are people who can learn better when learning through visual information and others who learn better through verbal information. The Bible is a book of verbal information, but parts of the Bible are also recordings of master teachers in action. Jesus used many
visual illustrations. The prophets in the Old Testament often used dramatic illustrations. Is there a possibility that people who heard master teachers in person learned much better than people of today who only read the verbal information and do not have the benefit of the visual illustrations or information?

It has been shown by a number of studies that people have two sides of the brain. One is for learning visual information, the other for learning verbal information. Tomlinson-Keasey, Kelly, and Burton (1978) suggest the following: (1) hemispheric specialization for visual stimuli develops later than speech and auditory specialization; (2) this specialization increases with age, even into adolescence; (3) it is confounded by differential processing of matched versus unmatched stimuli; and (4) stimuli processed in the right hemisphere seem less specialized than stimuli processed in the left hemisphere. Consequently, it would appear that clear advantages hold constant across school-aged children, while visual asymmetries increase with age. They also suggest a disassociation or type of independence between auditory and visual perceptual asymmetries.

Bryden (1965) and Zurif and Bryden (1969) have demonstrated such a disassociation in adult subjects. Lewandowski (1982) studied forty-eight boys who were divided into four age groups and presented them with a
variety of hemispheric specialization tasks. Asymmetries were demonstrated on manual, visual, and auditory tasks. The degree of these asymmetries did not change across age groups. Again, a disassociation between visual and auditory perceptual asymmetries was demonstrated.

Edwards (1979) maintains that what is most significant about the existence of two distinct hemispheres in the brain is not what they process, but how they process. The left hemisphere is primarily verbal while the right hemisphere is imagistic. But, the right hemisphere has some language capacity and both hemispheres process images.

Miller (1982) maintains that it is of value to involve as many of the senses as possible in learning tasks. Since learners tend to demonstrate individual learning style preferences, a means of matching learner preference to learner task would result in more effective learning. The Modified Hill Cognitive Style Inventory, developed primarily at Mountain View College of the Dallas County Community College District, was designed to this end. A correlational study in a general biology class by Miller (1982) bore out the theory that learning style is a factor in the effectiveness of using video tapes as instructional tools.

Dunn and Dunn (1974) have identified eighteen areas of importance in identifying what affects learning. They
include: (a) immediate environment, which includes sound, heat, light, and design; (b) individual emotionality, which includes motivation, responsibility, persistence, and structure; (c) sociological needs, which include self, peers, adults and/or varied; and (d) physical needs, which include perceptual preferences, time of day, food intake, and mobility.

Other researchers have found that first, students can identify their own styles. Second, when exposed to a teaching style consonant with the ways they believe they learn, students score higher on tests of factual knowledge, have better attitudes, and are more efficient than those taught in a manner that is dissonant with their learning style. Third, it is advantageous to teach and test students in their preferred modalities (Domino, 1970; Farr, 1971).

Previous Discussion and Underlining Studies

One of the two key teaching techniques used in this study is underlining. In a study by Idstein and Jenkins (1972), no significant differences were found between underlining and repetitive reading, according to a T-test. They were found to be equivalent for even long passages.

Brady and Rickards (1979) designed a study using personal evaluations paired with study techniques. College students who received positive personal evaluations or no evaluation performed better on underlining than students
who received negative personal evaluations. Subjects se-
lected one sentence in each of seven paragraphs of a prose
passage. They then marked out what was least important in
the sentence, leaving only significant information. The
structural importance of the sentence to the whole was
then determined. The recall of sentences which were not
underlined as having high structural importance to the
paragraph as a whole was tabulated. Comparison of the
positive and no evaluation groups and negative and no
evaluation groups showed no differences on recall of sen-
tences which were not underlined. There was a significant
difference between positive and negative groups. Results
suggest that a personal evaluation before the task af-
ected recall.

Bausell and Jenkins (1977) found underlining may al-
low parts of a passage to be learned at the expense of
other parts. Underlined items were recalled far more of-
ten than items not underlined. However, when study time
is controlled, study aids do not prove helpful to recall.

Rickards and August (1975) concluded that underlining
cues the reader to focus on underlined material. Under-
lining produces both intentional and incidental learning
and retention. A more recent study was conducted by
Glover and Zimmer (1980). When feedback was given to un-
dergraduate students, correct underlining was increased
and extraneous underlining was decreased.
Vocabulary also affects the use of underlining. Taub (1984) discovered that high vocabulary students performed better in comprehension and memory than students with a low vocabulary. Underlining cues aided performance of only the high vocabulary group. This suggests they were not successful in reducing vocabulary related differences in performance.

Poor reading skills also affect the use of underlining. Paris and Myers (1981) conducted a study of good and poor readers in the fourth grade. The poor readers used underlining significantly less than the good readers. This correlated with poorer comprehension and recall scores. The poor readers were often unaware of the negative influences of their strategies. An earlier study by Grabe (1980), who also grouped the fourth and sixth graders as good and poor readers, concluded that poor readers are too overburdened by lower reading skills to engage in differentiating important and unimportant material.

When given a choice, Rickards and Denner (1979) discovered that readers preponderantly chose underlined material over material that was conceptual in nature. Although the children preferred underlined passages, the results of the study suggest that underlining and adjunct questions may hinder, rather than help, recall performance in young readers.
In researching the subject of underlining, Hartley, Bartlett, and Branthwaite (1979) discovered that few studies provide support for the effectiveness of underlining. One reason is that a limited number of testing procedures has been used. A second reason may be that long term recall has been overlooked. They stated that little is known of how children benefit (or do not benefit) from underlining. They conducted an additional study in which sixth grade children were presented with experimenter-underlined or normal text. It was found that the children had significantly better recall when they had studied the underlined material than those children who had not studied underlined material, and that it was not obtained at the expense of other items of information in the text.

Mayer (1983) explained the cognitive processes involved in reading comprehension as selecting, organizing, and integrating. He cited studies which showed that when students were pressed for time, selection aids such as underlining assisted recall but would distract from integrating, which could have been done during idle time. Mayer then cited studies which showed that with adequate time, both structure, training, and signaling enhanced readers' understanding of expository prose.

Fass and Schumacher (1978) gave college students a prose passage to read and an examination following it. Three results became evident: (1) non-highly motivated
subjects performed better on the easy version than on the hard version of the text; (2) underlining aided only highly motivated subjects; and (3) underlining aided the subjects who worked on the hard version of the text. Tests were cited that found that semantic tasks, as compared to nonsemantic tasks, resulted in better recall. Fass and Schumacher (1978) reported that other studies had found that when students generated their own activities, such as underlining, they performed better on the tests than those who were given the material already underlined. The results of their study support the findings of Rickards and August (1975) that subjects who are allowed to underline while reading perform better than those who only read a passage. The underlining procedure apparently forces the former subjects into interacting more with the content of the passage.

There is considerable evidence that supports the premise that people with a more mature information processing system are able to channel important information and disregard the insignificant. Most young children, on the other hand, find it difficult to ignore irrelevant material. Brown and Smiley (1978) conducted a study on children and college age students. They concluded that as children mature they develop the ability to channel and organize the important aspects of the text. When given extra study time, college students are able to
improve their recall of important information. Children below the seventh grade do not seem to benefit from extra study time. The older the students, the more frequently they spontaneously elected to underline material. Brown and Smiley (1978) also discovered that there is a direct relationship between the underlining efficiency of the spontaneous users and their recall patterns. In fact, when induced to underline, they did not underline strategically and they did not recall more effectively.

Larsen and Hermann (1974) conducted a study on 116 adult Danes from two different socioeconomic status groups: high status and low status. It was observed that the high status subjects underlined a greater number of text segments than the lower status subjects. Previous research indicates that the high status subjects employ both more complex grammatical and logical structures than do the low subjects, which could contribute to the difference in underlining.

Boon (1974) disagrees with the findings on the values of underlining and note taking while implying that future research might be better aimed at improving verbal rather than study skills in undergraduate populations. He claims there has not been enough testing performed on this concept and the testing that has been done is inadequate due to methodological shortcomings.
Kulhavy, Dyer, and Silver (1974) studied high school students taking two different types of tests, a multiple choice test and a constructed response test. They discovered that underlining for a multiple choice test aids in recall better than underlining for a constructed test. They suggest that underlining allows the learner to identify those aspects of the presentation which appear important to him. However, what a student remembers is differentially influenced both by the behavior he exhibits during learning, such as note taking, and the type of test he expects to receive.

Cashen and Leicht (1970) studied the performance of a general psychology class on questions based upon statements set apart by underlining, which was found to be superior to performance on statements that were not underlined. They found that, contrary to other studies, performance on questions about materials adjacent to materials selected for isolation was better in underlined than in non-underlined conditions. Their results showed that questions on adjacent materials were answered correctly significantly more often in the underlined than in the non-isolated condition with p<.05. In other words, better performance on underlined statements does not appear to occur at the expense of remaining materials. Cashen and Leicht (1970) believe the underlined statements support Ausubel's (1960) advanced organizers, providing conceptual
"pegs" around which material could be organized. This was supported with the fact that sentences selected for underlining were generally statements of principles or concepts.
CHAPTER REFERENCES


CHAPTER III

Procedures of the Study

This chapter presents the procedures employed in the study. It contains a description of the testing done prior to the study, the subjects, the procedures for collection of data, and the instrumentation and procedures used in analyzing the data pertinent to each hypothesis.

Pilot Studies

Ten students from North Texas State University, Denton, Texas, four of whom were paid, and six of whom volunteered, were administered various tests lasting at least fifty minutes.

The first two students were assigned to read a chapter of the Bible and then instructed to write all that they could recall about the material. The students were timed to determine how long they would spend recalling the material when given an unlimited amount of time in which to do so. As pretesting progressed, other students were assigned to read for five minutes and then to discuss this material for fifteen minutes with the researcher. After the discussion period, the students were given an unlimited amount of time in which to recall the material.
These same students were given the opportunity to read another portion of the chapter for five minutes, and then underline in it for fifteen minutes, and then recall all that they could in an unlimited amount of time.

In addition, these same students were given the opportunity to recall a portion of the scripture which they had not read in order to determine how many students could recall something when immediate recall was not being tested.

After it was clearly determined that very few students would do recall writings for more than twenty minutes for what they had read for five minutes, the entire test was administered, with strict time-keeping, to two different Sunday school classes so that it would closely duplicate what was initially proposed.

The reaction of the Sunday school class students and the amount of material which they wrote came within the level of expectation of having only small differences as compared to the university students.

**Procedure for Selecting Examinees**

A Turbo Pascal program (Appendix A) was used to randomly select twenty institutions from among the sixty-three institutions of higher education in the North Central area. The program also randomly assigned these institutions to Experimental Group D (EGD) or Experimental
Group U (EGU). EGD used discussion as a learning technique while EGU used underlining instead.

Each institution selected by the Turbo Pascal program was contacted by telephone to ascertain the identity of the chairperson of the department who taught Bible, and his or her address was also requested. This chairperson was then sent a letter (Appendix B) requesting the participation of a class in a study for one class period which would explore teaching techniques for Bible study at the college level. Those institutions who did not respond within two weeks were contacted by telephone and encouraged to participate in the study. Those who responded positively were given the option of timing each phase of the test themselves or using a tape recording with instructions followed by timed silence for each phase of the test.

Description of the Examinees

The subjects used in this study were enrolled in Bible classes in the following higher educational institutions located in the North Central area of Texas: Abilene Christian University, Richland Community College, Bishop College, Baylor University, North Texas State University, Southwestern Assembly of God, and Hardin-Simmons University. The North Central part of Texas was geographically defined for the study as east from and inclusive of Abilene, then north from and inclusive of Waco, then west
from and inclusive of Commerce, Texas. Ten of the twenty randomly selected institutions expressed a willingness to permit the study to be conducted in their classrooms, but three stated that it was too late in the semester. Characteristics of the seven participating institutions are in Table I.

Of the seven participating institutions, three were assigned to study by discussion and four were assigned to study by underlining. Four of the schools had accredited graduate degrees and three did not. Five private and two public institutions participated in the study. The par
Table I

Characteristics of the Participating Institutions

<table>
<thead>
<tr>
<th>Technique</th>
<th>Graduate</th>
<th>Examinees</th>
<th>Public</th>
<th>SocIndx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss</td>
<td>No</td>
<td>23</td>
<td>No</td>
<td>46.2</td>
</tr>
<tr>
<td>Discuss</td>
<td>Yes</td>
<td>7</td>
<td>Yes</td>
<td>23.4</td>
</tr>
<tr>
<td>Discuss</td>
<td>No</td>
<td>18</td>
<td>Yes</td>
<td>33.7</td>
</tr>
<tr>
<td>Underline</td>
<td>Yes</td>
<td>11</td>
<td>No</td>
<td>29.3</td>
</tr>
<tr>
<td>Underline</td>
<td>Yes</td>
<td>18</td>
<td>No</td>
<td>29.8</td>
</tr>
<tr>
<td>Underline</td>
<td>Yes</td>
<td>16</td>
<td>No</td>
<td>33.5</td>
</tr>
<tr>
<td>Underline</td>
<td>No</td>
<td>20</td>
<td>No</td>
<td>43.4</td>
</tr>
</tbody>
</table>

Participating classes had a total of 113 examinees in attendance on the day of the study, ranging from 7 to 23 students per class. The highest mean socio-economic index was 23.4 for a public university with graduate programs whose students studied by discussion. The lowest mean socio-economic index was 46.7 for a class from a private college without graduate programs who also studied by discussion. The mean socio-economic index for all students was 36.3, and the median was 36.

Procedures for Administering the Study

After obtaining their consent to participate in the study, a letter was sent to the teachers of groups randomly selected as representative of the higher education
Bible classes in north central Texas. Included in the letter was a typewritten copy of instructions that the teacher either read to the class or played to them on a tape recorder. The written instructions for administering the study are in Appendix C.

Time constraints for the study were very important. Pretests had determined that most readers could read the 974 word material to be studied in five minutes. Discussion or underlining could be accomplished in fifteen minutes and most pretested students could not recall enough information to keep them writing for twenty-five minutes. A fifty-minute class period allowed just enough time to sufficiently test hypothesis one and three and still have five minutes for giving quick answers to the questions about socio-economic status and evaluation of the learning techniques. After hearing the instructions for one minute, the students were given five minutes to read Colossians Chapters Two and Three (Appendix E). The portion from the Simple English Bible: New Testament selected for each group to study was the second and third chapters of Colossians. This material was selected because of its complexity and its lack of frequent recitation by any particular religious group. The text dealt with specifics of new life versus observance of religious traditions. It was therefore assumed that these two chapters would be unlikely to cause an emotional block or be
in the long-term memory of the examinees. Instructions for the group using discussion informed them that they had fifteen minutes for a discussion session. They were then given twenty-five minutes to write the main points of the material studied. The instructions for the group using underlining were identical, except that they were asked to spend fifteen minutes underlining the major points in the portion they had just read. Their instructions to read for five minutes and then write the major points in the portion read for twenty-five minutes after underlining the major points were identical to the instructions given to the group learning by discussion, except for the instruction to underline rather than to discuss.

Research Design

A modified posttest only design was employed. Borg and Gall (1983) state it is the design of choice when there is a chance that a pretest will bias the experimental treatment. They enumerate disadvantages of this design which include incomplete elimination of initial differences between groups, a lack of an initial status measure from which to form subgroups in order to determine whether the experimental treatment has a different effect on subjects at differing levels of measurement, and differential attrition during experimentation.
Procedures for Analysis of Hypothesis One

A count was made of the total number of words used in recall writings of each examinee. For each one of the 391 words which had appeared in the material studied, the number of times each examinee had used that dictionary entry was entered into a frequency table. A group dictionary entry proportion table was built with proportionate usage of each of the 391 words which had appeared in the material studied. The entries in this table were simply the sum of all examinee dictionary entry frequency table numbers for EGD and EGU divided by the total number of words in recall writings of all examinees in each experimental group. The group dictionary entry proportion table was augmented by two columns. One was for proportionate usage of each dictionary entry in the material studied and the other was for proportionate usage of each of the dictionary entries by the Brown University Standard Corpus of Present-Day Edited American English. This augmented group dictionary entry proportion table was then telecommunicated to the North Texas State University Computing Center for analysis by the researcher using the procedure for Pearson correlation of the SAS library of computer programs.

Pearson Correlation for Hypothesis One. The Pearson product-moment correlation determines if there is a relationship between sets of matched items. In this study,
the matched items were the weighted usage proportions in
the material studied and two groups using different study
methods. The level of significance was calculated for the
critical-ratio z-test of correlation between the material
studied with those who underlined as opposed to the same
statistic applied to correlation between the material
studied with those who discussed.

According to Ferguson (1976), the Pearson Correlation
is a common statistic used to determine the relationship
between two groups of variables. If an increase in one is
always accompanied by a corresponding increase in the
other, the correlation is 1.0. Pearson Correlation was
chosen to test hypothesis one because it is a common
statistic. The Pearson Correlation was made more useful
for language related research by using a weighted usage
proportion, developed by the researcher. Without the
weighted usage proportion, the number of commonly used
words such as "the" are so likely to appear in both docu-
ments that the correlation would be too high to distin-
guish between meaningful differences. The disadvantage of
the Pearson Correlation is that it only gives one number.
In testing recall, it is interesting to note not only how
much was recalled, but also exactly what was recalled.
Another problem with correlation coefficients, according
to Ferguson (1976), is that as the correlation approaches
1.0, it is increasingly skewed.
Procedures to Calculate Recall Volume. The number of words written per examinee in each group was calculated by summing the number of words written by each examinee for all of the examinees in EGD, and then for all examinees in EGU. The number of words written per minute per examinee was calculated by multiplying the number of examinees at each institution times the number of minutes allowed for recall writing at this institution. This product, representing the total number of minutes used by students in recall at each institution, was summed for all of the institutions in EGD and for all institutions in EGU. The total EGD recall minutes was then divided into the total number of EGD recalled words to obtain the number of words per minute recalled by the discussion group. The total EGU recall minutes was divided into the total number of EGU recalled words in the same manner to obtain the number of words per minute recalled by the underlining group.

Proportion of Significant Proportions for Exact Recall. The significance of difference between two proportions on the 391 dictionary entry categories was calculated in the following manner. The significance of difference between two proportions was calculated for the material studied compared with the recall writings of EGD for each of the 391 entries in the augmented group dictionary entry proportion table. The significance of difference between two proportions was calculated for the
material studied compared with the recall writings of EGU for each of the 391 entries in the augmented group dictionary entry proportion table. The significance of the difference between two proportions was then calculated using as input the proportion of significant proportions obtained from the 391 tests for the significance of difference between two proportions divided by 391.

Proportion of Significant Proportions for Recalled Synonyms. An additional test was conducted to find the significance of the difference between the writings of the students and the portion of the Bible which they studied. This test took into account all the synonyms for any word contained in the original. For example, if the original contained the word "good," and a student wrote "excellent," it would be counted the same as if he/she had written "good."

Both groups were analyzed to determine the significant difference between their recall and the portion of the Bible which they studied when synonyms were considered as a correct response. In order to count synonyms as correct responses, the Turbo Lightning computer program was allowed to use its largest dictionary and thesaurus. This combination of dictionary and thesaurus has been published in print as the Random House Concise Dictionary and the Random House Thesaurus. This 83,000 word Random House Dictionary and Thesaurus was used on the 391 dictionary
items which appear in the material studied by the students. Every synonym for each one of the 391 words was put into a dictionary of correct responses which was used in calculating responses in the writings of the students. The significance of difference between two proportions was then calculated using this synonym expanded dictionary of correct responses, rather than the 391 words as the standard upon which the significance of difference was calculated. The synonyms counted as correct responses for the discussion groups are listed in Appendix F. The synonyms counted as correct responses for the underlining groups are listed in Appendix G.

Procedures for Analysis of Hypothesis Two

The significance of difference between proportions was used to test hypothesis two. The number of examinees who marked each possible choice on the statement, "I believe I would be able to answer more questions correctly after underlining() discussion()," was totaled. These numbers were then used in the formula for purposes of calculating the significance of difference between two proportions for testing hypothesis two.

Procedures for Analysis of Hypothesis Three

An augmented total dictionary entry proportion table was entered into one of the personal computers assembled by the researcher. This augmented total dictionary entry proportion table had three columns. The proportionate us-
age of the 319 dictionary entries in the material studied, total recall writings, and the Brown University Corpus of Present-Day Edited American English were analyzed by a Turbo Pascal statistical procedure to test the significance of difference between two proportions.

The significance of difference between two proportions on the 116 Quester categories was calculated in the following manner. The recall writings of each examinee were entered into a computer. These digital data were telecommunicated to Quester for analysis. Quester produced a proportional usage examinee behavioral sciences category table and a factor analysis index for each examinee. This proportional usage examinee behavioral sciences category table contained 116 categories specific to religion, psychology, education, and social studies. All of the recall writing words assigned to one of the 116 categories are listed with their assigned category in Appendix G. The total number of times all of the words in a category were used by an examinee was divided by the total number of words put into any of the 116 categories to arrive at the proportion entered into each cell. All of these proportions were then summed for EGD, summed for the material studied, and summed for EGU. The significance of difference between two proportions was then calculated for the EGD recall writings compared with the material studied. The proportion of significant
proportions was then calculated using the number of significant proportions obtained from comparing the writings of each experimental group with the materials studied.

**Quester Factor Analysis Pertinent to Hypothesis Three.** Quester did a factor analysis on the material studied and the recall writings of each examinee using the four factors which accounted for 93 percent of the variation in the writings of 26 social organizations analyzed in the dissertation of Cleveland (1971). The significance of difference between two proportions was calculated for each of these four factors using each of the four factor numbers obtained by Quester on the material studied with 974, the total number of words in the material studied, considered as N compared with the sum scores of all examinees using the total number of words written by examinees as N for the second proportion.

**Procedures for Analysis of Relationship Between Graduate Accreditation and Recall**

The recall writings of all of the examinees from institutions with accredited graduate degrees were compared to the recall writings of all of the examinees from institutions without accredited graduate degrees.

Except for regrouping recall writings on the basis of the institution's graduate program rather than the learning technique, the procedure is the same as the one used
for obtaining the measurement which compared the recall writings of EGD with the recall writings of EGU in the testing of hypothesis one by the significance of difference between two proportions.

Students from institutions with recognized graduate degrees were named Experimental Group G (EGG). Students from institutions without recognized graduate degrees were named Experimental Group W (EGW).

The proportion of significant proportions was calculated for the material studied compared with the recall writings of EGG for each of the 391 entries in the augmented group dictionary entry proportion table. The proportion of significant proportions was calculated for the material studied compared with the recall writings of EGW for each of the 391 entries in the augmented group dictionary entry proportion table. The significance of difference between two proportions was then calculated using as input the proportion of significant proportions for EGG and EGW.

The above algorithm is a conversion of a single thought to sequential logic. The original single thought design of the researcher is given in the following sentence: The significance of the difference between two proportions is calculated using as the first proportion the proportion of significant proportions resulting from the application of the significance of the difference be-
between two proportions for every word in the material studied as compared with the recall writings of all of the examinees from institutions with accredited graduate degrees and using as the second proportion the proportion of significant proportions resulting from the application of the significance of the difference between two proportions for every word in the material studied as compared with the recall writings of all of the examinees from institutions without accredited graduate degrees.

The recursive logic algorithm for this thought is as follows. Find the significance of the difference using as the first proportion the proportion of significant proportions in the recall writings of EGG and using as the second proportion the proportion of significant proportions in the recall writings of EGW. Find the proportion of significant proportions in the recall writings of EGG by finding the proportion of lexical entries in the recall writings of EGG which are significantly different from the proportion of the same lexical entry in the material studied. Find the proportion of lexical entries in the recall writings of EGG which are significantly different from the proportion of the same lexical entry in the material studied by finding for each lexical entry the significance of the difference between two proportions using as the first proportion the proportionate usage of this lexical entry in the material studied and using as the second proportion
the proportionate usage of this lexical entry in the recall writings of EGG. Find the proportionate usage of a lexical entry in the material studied by dividing the total number of words in the material studied by the number of times this lexical entry appears. Find the proportionate usage of a lexical entry in the recall writings of a group by dividing the total number of words in the recall writings of that group by the number of times this lexical entry appears in this group of recall writings. Find the proportion of significant proportions in the recall writings of EGW using the same recursive algorithm used to find the proportion of significant proportions in the recall writings of EGG.

Procedures for Analysis of Relationship between Socio-Economic Status and Recall

The significance of difference between the recall writings of examinees was calculated in comparison to the material studied with examinees grouped according to whether they were above or below the socio-economic mean of all examinees. This was accomplished using the proportion of significant proportions from the material studied compared with all the recall writings of all examinees grouped on the basis of socio-economic position.

Except for regrouping recall writings on the basis of each examinees' socio-economic position, the procedure is the same as the one used for obtaining the measurement
which compared the recall writings of EGD with the recall writings of EGU in the testing of hypothesis one by the significance of difference between two proportions. The procedure is also identical to the the one used for comparing the recall writings of EGU with the recall writings of EGW in the testing of the first unproposed hypothesis.

Examinees were grouped by social position as determined by Hollingshead's (1965) Two Factor Index of Social Position. This is a weighted usage of the two factors of occupation and education. A similar three factor scale was used at Yale University to establish reliability and validity from a random sample of families in New Haven. The third factor, used by Hollingshead (1958) in New Haven, was the ecological position of the family residence. Each chosen household was interviewed extensively for data on the family's ethnic, religious, economic, educational, social, and residential background. The reliability of this procedure was established by two sociologists, August B. Hollingshead and Jerome K. Meyers, who independently agreed on the class position of 96 percent of the families and arrived at mutual agreement on the remaining 4 percent. The two factor index rather than the three factor index was used because the third factor, ecological position of the family residence, was not feasible for the present study. This is because replies were anonymous and neither the researcher nor the
examinees had the ecological rankings of all North Central Texas residential addresses comparable to those available to Hollingshead for New Haven.

This agreement of social class by Hollingshead and Meyers was reduced to a mathematical formula by multiplying each of the two or three factors by a weight. Pooler (1975) was one of the studies which chose to use the two factor index. The number for the occupational category is multiplied by seven and the educational category is multiplied by four. Small numbers represent the most esteemed occupational and educational positions. The fact that only two factors were used instead of all of the data available to Hollingshead after extensive interviews should not result in social class scores more than one social class away from what Hollingshead and Meyers would have classified on the basis of the extensive interview data. According to Hollingshead (1958, p. 394) there was a .906 correlation between the Hollingshead and Meyers classification and the prediction which could have been made by occupational category and educational level. The following example of a breadwinner who owns a small business and who has completed partial high school explains how the social position score is computed:

<table>
<thead>
<tr>
<th>Scale Factor</th>
<th>Factor</th>
<th>Score</th>
<th>Weight</th>
<th>Score x Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational</td>
<td>3</td>
<td>7</td>
<td></td>
<td>21</td>
</tr>
</tbody>
</table>
Index of Social Position = 41

Occupation was based on the following scale:

1. Higher Executives, Proprietors of Large Concerns, and Major Professionals.
4. Clerical and Scale Workers, Technicians, and Owners of Little Businesses.
5. Skilled Manual Employees.
7. Unskilled Employees.

Education was based on the following scale:

1. Graduate Professional Training
2. Standard College or University Graduation.
3. Partial College Training.
5. Partial High School.
7. Less than Seven Years of School.

The Two Factor Index can be related to traditional class status labels according to the following:

<table>
<thead>
<tr>
<th>Social Class</th>
<th>Range of Computed Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Class</td>
<td>11-17</td>
</tr>
</tbody>
</table>
The questions necessary to obtain the categories listed by Hollingshead and repeated on a questionnaire used by Pooler (1975) were altered by the researcher to gather information about the socio-economic position of the parents. This was done in order to determine if socio-economic position rather than learning technique was a major factor in recalling the material studied. These data were used to determine if there was a correlation between social position and the recall of the subjects.

**Reliability and Validity of the Significance of the Difference Between Two Proportions**

The Significance of Difference Between Two Proportions was used to test hypotheses two and three. When there are only two proportions involved, as there were in hypothesis two, this statistic gives one number to describe the significance of difference between the two proportions. This statistic was used to determine the significance between proportionate usage of each word in the collection of documents tested by hypothesis three. The proportion of significant proportions for each collection of documents was then tested for a significance of difference.
In an attempt to encourage social scientists to use significance tests only when appropriate, Gold (1969) says,

When dealing with two quantitative variables, the analyst is less apt to ignore the degree of relationship and thus ignore the matter of substantive significance. The use of a correlation coefficient calls direct attention to the degree of association. Even though he may be intent on determining the statistical significance of correlation, he is almost forced to note the size of the r. And when, for example, a statistically significant r is .12, he is not generally going to attach a great deal of importance to the relationship. (pp. 44-45)

Content validity of a statistic means to what extent that statistic measures what it is meant to measure. The most respected methods of content analysis, such as the Harvard General Inquirer and the Quester company techniques, rely heavily on the proportionate use of words. This researcher is probably the first to use the significance of difference between two proportions for content analysis. This initiative was based on the researcher's logical analysis with encouragement from statisticians at Quester. The fact that this statistic measures what it is supposed to measure is established in statistical textbooks, such as Ferguson (1976). Sampling error is eliminated by taking the proportion of every word. There is a possibility of level significance error in the use of any statistic. The level of significance of .05 was used in every test on the significance of difference between two
proportions in this study because, according to Borg and Gall (1983), .05 is a commonly acceptable significance level in scientific studies, especially in behavioral sciences.

Reliability of this approach was established in a variety of ways in this research, including the analysis of unproposed hypothesis. Additional evidence for the validity and reliability of this approach is the high agreement between the significance of difference between two proportions on proportion of significant proportions and the results obtained from much more computationally expensive Quester techniques, whose effectiveness has repeatedly been proven (Zaslow, 1985). It is obvious that, if recall writings do not contain any of the words contained in the material studied, then the z score obtained will be the possible maximum. If recall writings are an exact reproduction of words contained in the material studied, then the z score will be the possible minimum. This is also true if words contained in the material studied have been jumbled to say the opposite of the material studied without adding or deleting any words. However, most recall writings are not likely to follow this pattern. The researcher discerned only a few isolated sentences which followed this pattern in recall writings used in this study. Recall writings may contain explicit names of people or use pronouns such as "he" in place of "I" in the
material studied. Other grammatical changes such as tense may be expected. The magnitude of such problems is minimized by the fact that most such occurrences are on commonly occurring words.

The formula for the significance of difference between two proportions is:

\[ Z = \frac{P_1 - P_2}{\sqrt{\frac{p(1-p)}{N_1} + \frac{p(1-p)}{N_2}}} \]

where \( P_1 \) and \( P_2 \) are the proportions and \( N_1 \) and \( N_2 \) are the total number of words in each case and

\[ \bar{p} = \frac{N_1P_1 + N_2P_2}{N_1 + N_2} \]

EXAMPLE:

Authority - In the material studied, there were 974 words with 3 occurrences of this word. In recall writings of one group, there were 6104 words with 4 occurrences.

\[ P_1 = \frac{3}{974} = .0030800 \quad N_1 = 974 \]
\[ P_2 = \frac{4}{6104} = .0006553 \quad N_2 = 6104 \]
\[ p = \frac{(974 \times 0.0030800) + (6104 \times 0.0006553)}{974 + 6104} \]
\[ p = 0.0009889 \]

\[ z = \frac{0.0030800 - 0.0006553}{\sqrt{\frac{0.0009889(1-0.0009889)}{974} + \frac{0.0006553(1-0.0006553)}{6104}}} \]
\[ z = 2.31188. \]

**Summary**

A variety of statistical techniques was applied to the data to determine various aspects from the data. The Pearson Product Moment Correlation Coefficient was used to determine if there was a significant difference between the material studied and the recall writings of each of the study groups. A single application of the test for Significance of Difference Between two Proportions was used to test hypothesis two. A recursive application of the test for Significance of Difference Between two Proportions was used to determine every other hypothesis.

In order to deal with the problem of this study the following hypotheses were formulated:

1. When asked to write major concepts in the study material, the weighted usage proportion of words in the writings of the students who study by underlining will be closer to the weighted usage proportion of words in the
original when compared to the weighted usage proportion of words used by those who studied by discussion.

2. Both groups of students will say that they can write more of the major concepts after underlining rather than after discussion.

3. The proportion of significant proportions obtained between all writings of all examinees and the material studied will be larger than the proportion of significant proportions between all writings of all examinees and the Brown University Corpus of Present-Day Edited American English.

Recall writings of students using two study methods, discussion and underlining, were compared to the original study material and to the Brown University Corpus of Present-Day Edited American English. In this chapter, selection and description of the sample population were stated, procedures for collection and analysis of data were given, and instrumentation was discussed. The following chapter presents the analyses of data collected in this study.
CHAPTER REFERENCES


87
CHAPTER IV

Results

Analysis of Purpose

The purpose of this chapter is to present information about the recall by university Bible students after discussion and after self-study by underlining. The data were obtained by comparing recall writings of students to the original study material and to the Brown University Standard Corpus of Present-day Edited American English.

Analysis of Examinees

Test groups consisted of entire Bible classes selected at random out of sixty-three institutions of higher education in North Central Texas. All students who participated in the study were told they were participating on a voluntary basis. According to informal reports from professors administering the study, the process of reading for a specified period of time, using a learning technique for another specified period of time, and then attempting to write everything the student could recall, did not cause a problem for any examinee.

Results Pertinent to Hypothesis One

Hypothesis one states: When asked to write major concepts in the study material, the weighted usage
proportion of words in the writings of students who study
by underlining will be closer to the weighted usage
proportion of words in the original when compared to the
weighted usage proportion of words used by those who stud-
ied by discussion. Data relevant to hypothesis one are
presented in Table II.

Table II

Pearson Product Moment Correlation on the Weighted Usage

Proportions

<table>
<thead>
<tr>
<th>Group</th>
<th>r</th>
<th>Critical z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion</td>
<td>.8432</td>
<td>.0001</td>
</tr>
<tr>
<td>Underlining</td>
<td>.8359</td>
<td>.0001</td>
</tr>
</tbody>
</table>

The data in Table II reveal no significant difference
between the groups who studied by discussion and the
groups who studied by underlining; therefore, hypothesis
one is rejected. When the proportionate occurrence of
each word is divided by the proportion of that same word
in the Brown University Standard Corpus of Present-Day
Edited American English and correlated with the material
studied by Pearson's Correlation, the rounded correlation
for both groups is .84. Since such high correlations are
also highly skewed, other statistical techniques were applied to additional aspects of the same data.

Recall Volume Pertinent to Hypothesis One. The number of words written per student was not part of the original hypothesis one, but perhaps should have been considered as a variable in the success of each learning technique. The 48 students who studied by discussion wrote a total of 6,104 words which is 127.17 words per student. The 65 students who studied by underlining wrote a total of 13,408 words for a total of 206.28 words per student, in spite of the fact that one class of 20 students using underlining was given only 15 minutes in which to recall while all other classes followed the prescribed allotment of 25 minutes for recall. When this fact is considered, the group studying by underlining wrote more than 9.4 words per minute allowed, while the group studying by discussion only wrote 5.0 words per minute. This is a significant improvement for the group studying by underlining according to the significance of difference between two proportions.

Results of the Exact Recall Proportion of Significant Proportions Pertinent to Hypothesis One. The proportion of significant proportions as used in hypothesis three was applied to hypothesis one because statistical techniques used to test hypothesis three pinpointed exactly which
words were in correct proportion. The results are reported in Table III.

Table III
Proportion of Significant Proportions for Exact Recall

<table>
<thead>
<tr>
<th>Group</th>
<th>Recall Proportions Different</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Discussion</td>
<td>107</td>
</tr>
<tr>
<td>Underlining</td>
<td>52</td>
</tr>
</tbody>
</table>

\[ z = 4.89 \]

Table III illustrates the fact that the number of words in the recall writings whose proportions were altered by the underlining group was less than half the number of words whose proportions were altered by the discussion groups. Those who studied by discussion had no significant difference in 284 of 391 different words which they had studied. But there was a significant departure from the material studied in 107 out of the 391 different words as recalled by those who studied by discussion. On the other hand, those who studied by underlining recalled 339 of the 391 words without any significant changes. There was a significant difference in only 52 of the 391
unique words as recalled by those who underlined. The significant difference between two proportions was calculated for the differences between those who studied by discussion and those who studied by underlining. The z score, which summarizes higher agreement with the material studied by the groups using underlining versus the groups using discussion, is 4.89. This is a significant difference. The data in Table III would have supported hypothesis one.

A list was then made of words which had been recalled with a significant variation from the material studied by both the underlining and the discussion groups. When common mistakes were subtracted out of both groups, it produced the following list of words not recalled correctly by groups that used discussion. This list shows in what areas the writings of the group that studied by discussion significantly deviated from the material studied, while there was not a significant deviation on these words in the recall writings of the group that studied by underlining.

Only the discussion group underemphasized the following lexical entries:

abundant, add, against, am, anyone, appear, authorities, authority, believing, called, chosen, code, complete, cursing, direct, disqualify, everything, face, feelings, future, god's, Greeks, handle, happy, harsh, held, hidden, holy, I, image, inheritance, joints, knowing, looking, loves, met, moon, nailed, negative, onto,
openly, or, orderly, orders, peace, perfect, praise, psalms, race, rulers, Sabbaths, secret, singing, so, songs, strict, stripped, taste, thankfulness, these, together, touch, truly, using, wealth, were, will, words, written.

Only the discussion group overemphasized the following lexical entries:

and, on, their, us.

Results of the Recall of Synonyms Pertinent to Hypothesis One. The proportion of significant proportions was applied to the data for hypothesis one when synonyms in the recall writings were considered as correct responses. The results are reported in Table IV.

Table IV illustrates that the number of words whose proportions were altered by the discussion group was almost twice the number of words whose proportions were altered in recall writings of the underlining groups. Those who studied by underlining had no significant difference in 46 of 391 different words which they had studied. But there was a significant departure from the material studied in 90 out of 391 different words as recalled by those who studied by discussion. Those who studied by underlining recalled 345 of 391 words without any significant changes. There was a significant difference in only 46 of the 391 unique words as recalled by those who underlined. The significant difference between two proportions was calculated for the differences between those who studied by discussion and those who studied by underlining. The z
z score which summarizes higher agreement with the material studied by groups using underlining versus groups using discussion is 4.15. This is a significant difference. The data in Table IV would have supported hypothesis one.

Table IV

<table>
<thead>
<tr>
<th>Recall Proportions Different</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Group</td>
<td></td>
</tr>
<tr>
<td>Discussion</td>
<td>90</td>
</tr>
<tr>
<td>Underlining</td>
<td>46</td>
</tr>
</tbody>
</table>

z = 4.15

The group which studied by underlining showed a significant difference in 46 out of 391 different lexical entries contained in the portion of scripture which they studied. In contrast, the group which studied by discussion showed a significant difference in 90 of 391 entries.

At the .01 level, a highly significant difference of 4.15 was found between these two proportions.
Results Pertinent to Hypothesis Two

Hypothesis two states: Both groups of students will say they can write more of the major concepts after underlining rather than after discussion. Data relevant to hypothesis two are presented in Table V.

There are four possible ways to mark two answer slots asking for one's preference. Considering the time limitation, no mark was to be expected along with the two logical choices. Some of the students may have misunderstood the question, or else wanted to express strong feelings for both techniques because they marked both choices as their preference. When asked, "I believe I would be able to answer more questions correctly after underlining( ) discussion( )," more students from both groups responded in favor of discussion. When asked, "I believe the method with the greatest devotional and emotional satisfaction would be underlining( ) discussion( )," again more students from both groups favored discussion.
Table V

Learning Technique Preferences

<table>
<thead>
<tr>
<th>Group</th>
<th>Could Answer More</th>
<th>Enjoy Study More If</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dis  Und  Both  No</td>
<td>Dis  Und  Both  No</td>
</tr>
<tr>
<td>Discussion</td>
<td>23  16  3  6</td>
<td>34  7  1  6</td>
</tr>
<tr>
<td>Underlining</td>
<td>40  24  0  1</td>
<td>44  19  2  0</td>
</tr>
</tbody>
</table>

Hypothesis two is rejected. The data in Table V did not support the hypothesis that both groups would say that they could answer more questions correctly after underlining.

Results Pertinent to Hypothesis Three

Hypothesis three states: The proportion of significant proportions obtained between all writings of all examinees and the material studied will be larger than the proportion of significant proportions between all writings of all examinees and the Brown University Corpus of Present-Day Edited American English. Data relevant to
Table VI

Table VI illustrates how all proportions of all recall writings of all examinees compare relative to proportions in the material studied and to proportions in the Brown University Standard Corpus of Present-Day Edited American English. There were 391 words upon which the significance of difference between two proportions of words was calculated. Of these 391 words, there was a significance of difference between proportions only 15 times when comparing the recall writings against what they had studied. But there was a significant difference between proportions in the recall writings against proportions in the Standard Corpus of Present-Day Edited American English 284 times. This proportion of
significant differences is more than eighteen times smaller for recall compared to material studied versus recall compared to the Corpus. The data in Table VI reveal a highly significant difference between the Brown University Standard Corpus of Present-Day Edited American English and the recall of students versus a highly significant agreement between the material studied and the recall of the students. This high agreement of recall with the material studied versus the high disagreement of recall with the Brown University Standard Corpus of Present-Day Edited American English produced a z score of -19.73, which strongly supports hypothesis three. Hypothesis three is accepted.

Results Pertinent to Hypothesis Three Using Quester Categories.

Quester used a genre specific dictionary to compare variations of the recall writings of all students. They partially analyzed the recall writings of all students with a 116 category dictionary specific to religion, psychology, education, and social studies. After Quester finished this categorization, proportions in each category were then telecommunicated back and analyzed with the same significance of difference between two proportions used to test hypothesis three. There were 96 of 116 categories recalled without any significant changes and only 20 categories with any significant changes. Below is a list of
these 20 categories with the percentage in the material studied, the percentage in the material recalled, the z score or significance and the category changed.

<table>
<thead>
<tr>
<th>Studied</th>
<th>Recalled</th>
<th>Significance</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000000</td>
<td>0.000469</td>
<td>-3.05</td>
<td>COMPETENCE</td>
</tr>
<tr>
<td>0.001820</td>
<td>0.008078</td>
<td>-4.21</td>
<td>OUGHT</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.000521</td>
<td>-3.22</td>
<td>PROHIBIT</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.000444</td>
<td>-2.97</td>
<td>SANCTION</td>
</tr>
<tr>
<td>0.033730</td>
<td>0.018292</td>
<td>2.67</td>
<td>OBJECT</td>
</tr>
<tr>
<td>0.044670</td>
<td>0.030348</td>
<td>2.16</td>
<td>YOU</td>
</tr>
<tr>
<td>0.001820</td>
<td>0.017083</td>
<td>-9.37</td>
<td>WE</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.000397</td>
<td>-2.81</td>
<td>INCOMPETENCE</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.004242</td>
<td>-9.20</td>
<td>BUNGLING THINGS</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.000314</td>
<td>-2.50</td>
<td>STRIVE NOUNS</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.000690</td>
<td>-3.70</td>
<td>MAY</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.000473</td>
<td>-3.06</td>
<td>MOVE-IN-SPACE</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.000465</td>
<td>-3.04</td>
<td>TO PLAN</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.001962</td>
<td>-6.25</td>
<td>ETERNAL</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.003434</td>
<td>-8.28</td>
<td>DIFFERENTIATE</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.000637</td>
<td>-3.56</td>
<td>FACTS</td>
</tr>
<tr>
<td>0.002740</td>
<td>0.006867</td>
<td>-2.35</td>
<td>STUDY</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.000296</td>
<td>-2.42</td>
<td>OBJECTS</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.000212</td>
<td>-2.05</td>
<td>SPEED</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.002845</td>
<td>-7.53</td>
<td>FELLOW FEELING</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.001277</td>
<td>-5.04</td>
<td>BUSINESS NOUNS</td>
</tr>
<tr>
<td>0.000000</td>
<td>0.001677</td>
<td>-5.78</td>
<td>ACTIVITY</td>
</tr>
</tbody>
</table>
This agreement in over eighty per cent of the categories, and the fact that failures to agree were concentrated primarily in categories which were not the major topics of the material studied, is additional strong evidence for the acceptance of hypothesis three.

**Quester Factor Analysis Pertinent to Hypothesis Three.** Quester also did a factor analysis based on their years of experience in doing this with billions of words. In his doctoral dissertation, Cleveland (1971), the president of Quester, used four dimensions which correctly accounted for 93 percent of the variation of rhetoric usage by 23 social organizations studied. When the writings of all students were considered, there was not a significant difference of proportions between what was studied and the recall writings of the students. One of Quester's four primary factor analysis categories is called normative or traditional. The highest scoring social organization genres for this category are writings produced by religious, military, and educational organizations. Normal scores for this category are .40. Since the portion of the Bible used for this experiment dealt with specifics of new life versus observance of religious traditions, the score for the Bible portion used in this study was .69. Some of the students in the discussion groups had scores as high as
.88. These were the highest scores in this category ever obtained by Quester. This is even more evidence which strongly supports the acceptance of hypothesis three.

Contrast of Examinees from Institutions With and Without Graduate Degrees

In addition to the three stated hypotheses, the data were regrouped without regard to the study method used. All of the recall writings from schools that offered graduate degrees were contrasted to all of the recall writings from those institutions with only undergraduate degrees. The students from institutions that offered graduate degrees were able to recall 332 of 391 words without a significant difference. They made significant departures from the material studied in only 59 of 391 words. However, those students from schools which did not offer graduate degrees were only able to recall 305 of 391 unique words without a significant difference. They made significant changes in 86 of 391 unique words recalled from the material studied.

Contrast of Examinees Above and Below the Socio-Economic Mean

In addition to the three stated hypotheses, the writings of all examinees were examined using the Hollingshead Two Factor Index of Social Position. The students with a socio-economic index of less than 36, the median, were put into one subgroup of each learning technique group. The
resulting four groups were analyzed for the significance of difference between two proportions by comparing all of their recall writings to the material they had studied. In both cases, the low socio-economic group correctly recalled 353 of 391 words studied without a significant difference in the proportion of what they studied. In both cases, the high socio-economic class correctly recalled 352 of 391 words studied without a significant difference in the proportion of what they had studied. The one extra word recalled in proportion by the low socio-economic group versus the high socio-economic group using the same learning technique is not significant. It is, however, interesting that the only group recalling the word "Christ" in correct proportion was the low socio-economic portion of the discussion group. The only group recalling the word "by" in correct proportion was the low socio-economic portion of the underlining group. All other words missed by any of these four groups were missed by all four groups. The complete list of words missed by the low socio-economic discussion group is in Appendix H.

Reliability Conclusion

There were 3699 total words in the recall writings of this group and 974 total words in the portion which they studied. It would seem that something may be wrong with the statistic in that the most frequently appearing words are the ones missed. However, the word "the" is the most
frequent word in the material studied and it was not missed by any of these groups.

**Additional Survey Data**

Some interesting data were collected by survey. Students were asked to reply to the question, "Please list all of the study methods you think would be excellent for studying the Bible in an academic manner in a public university or high school." Reading, discussion, and underlining were the primary learning techniques recommended. The data relevant to hypothesis two indicated that the personal preference of the examinees was the discussion method. Following is an enumeration and summarization of student comments which addressed teaching suggestions deemed appropriate for public schools or universities. A complete listing of the students' responses can be found in Appendix D. A categorized list has the following emphasis:

- 83 mentioned discussion techniques
- 60 mentioned reading techniques
- 37 mentioned study methodology
- 25 mentioned underlining techniques
- 25 mentioned procedural suggestions
- 21 mentioned lecturing
- 14 mentioned writing or note-taking
- 12 mentioned usage of A/V equipment
- 11 mentioned an historical approach
- 10 mentioned usage of questioning
- 9 mentioned usage of testing
- 8 mentioned usage of reference materials
- 7 mentioned outlining
- 7 mentioned memorizing
- 6 mentioned identifying main ideas
- 6 mentioned research
- 6 mentioned prayer
The survey results indicate what the students personally prefer as a learning technique is also what they feel would be good for others. The results of the data tabulated for hypothesis two indicated that the students preferred the discussion method of learning and the results of the survey indicate they consider discussion an excellent way for others to study the Bible as well. Their recall writings indicated that they were wrong in their assumption that they could recall more when they studied by discussion rather than underlining. Informal indications from pretest examinees were that discussion had been preferred primarily because it was the technique to which they had been exposed the most. The fact that more examinees say they can answer more with discussion, but, in fact, answer less with discussion is evidence that academic decisions should be based upon research rather than traditions.

Summary

Three hypotheses were tested. An analysis of the results led the researcher to reject hypothesis one and hypothesis two. Hypothesis three was accepted. Hypothesis
one would have been accepted if it had been tested by the proportion of significant proportions rather than by the Pearson Correlation. The proportion of significant proportions also showed superior recall in the writings of students from schools with accredited graduate programs, but showed no difference between students below the mean socio-economic level and those above it when the learning technique was held constant. A Quester factor analysis revealed the highest normative area scores obtained in more than fifteen years of analyzing billions of words.

The results of the compared recall writings of the students derived through the Pearson Correlation, Significance of Difference Between Two Proportions, Quester techniques, Hollingshead Two Factor Index to Social Position, and the examinee's survey comments were analyzed and discussed in terms of their relation to the purposes stated in Chapter I. A detailed summary of the study, findings, conclusions, implications, and recommendations for further study are presented in Chapter V.
CHAPTER V

Conclusions, Implications and Recommendations

Introduction

This chapter integrates a review of the background problem and the procedures of this study with an interpretation of the statistical data. Conclusions are then drawn from this discussion. Implications are made relevant to the antecedent and related research as well as to techniques used to solve similar problems. Recommendations for further study are then made.

Some schools do not teach the Bible as an academic subject. The Supreme Court of the United States has said, "there is nothing in this decision to prohibit the teaching of the Bible in the public school" (Abington versus Schempp, 1963). The court continued by saying the Bible could and should be taught, but strictly for academic pursuits rather than to promote denominational or devotional interests. According to Andrews (1975), most school administrators in Texas believe the Bible has a place in the public schools but are reluctant to do anything which would add to the liabilities and responsibilities of the teachers and administrators. This desire to have the
Bible taught coupled with fear of liability and responsibility is an indication that some teachers and administrators may not know how to teach the Bible for strictly academic pursuits rather than to promote denominational or devotional interests.

In other academic areas, there have been teachers who occasionally gave their own opinions and led their class on tangents of non-academic pursuits. Education would be greatly enhanced by research which delineates those teaching methods and techniques conducive to the pursuit of academic excellence and those methods and techniques that naturally lend themselves to opinions and partial knowledge. This study has made a step in the direction of delineating those methods and techniques that lead to opinions versus those that lead to academically worthwhile pursuits.

**Purposes of this study:** The first purpose was to determine if discussion or self study by underlining would best enable the student to recall studied material. The second purpose was to determine if students would say that they could answer more questions after discussing or underlining. The third purpose was to add to the body of information about the amount and type of learning in religious or Bible education as a college level academic subject.
Procedures used in this study: A computer program selected at random two groups of ten institutions of higher learning of the sixty-two institutions in the North Central portion of Texas. The first group selected was to study by discussion and the second group was to study by underlining. Letters were sent to the Chairperson of the department responsible for the teaching of Bible or religion studies at each one of the institutions selected by random to participate in the study. Those institutions who returned a consent to participate in the study were contacted in order to determine when the study would be given and whom they would choose to administer the study. All students who participated in the study were told they were participating on a voluntary basis, were going to learn a portion of the Bible by reading it for five minutes, use their particular learning technique for fifteen minutes, and then attempt to write all they could recall in twenty-five minutes. They were also told there would be some final questions to be used as a basis upon which to generalize how rapidly others with the same occupational and educational background might be able to learn the Bible. These final questions could be completed in five minutes.

Four professors administered the test and kept their own time. Two professors requested that the researcher conduct the study in person. One institution used a tape
recording with timed instructions in order to administer the test.

All examinees were given a printed copy of material to study which began with the second chapter and continued to the end of the third chapter of Colossians in the Simple English Bible. This was a total of 974 words. There were 391 unique words in this material.

Conclusions and Discussion

The first hypothesis was that the recall writings of the group that studied by underlining would have a significantly higher correlation with the material studied than the recall writings of those who studied by discussion. The correlations did not prove to be significantly different. Both the discussion and underlining groups had such an extremely high correlation to the material studied that it was impossible to determine that one group had done better than the other. However, the z-scores resulting from the significance of difference between two proportions clearly showed that the underlining group had done much better than the group which studied by discussion. Also, when the synonyms test was used, the group which studied by underlining the main points showed a significantly higher recall to the Bible portion which they studied than did the group which studied by discussion.

In the experiment by Idstein and Jenkins (1972), they found no significant difference between underlining and
repetitive reading for the same amount of time. Rickards and August (1975) state that the study by Idstein and Jenkins (1972) is one of the few studies wherein underlining has been viewed as an instrumental activity rather than as an experimenter provided cue. However, one problem with this experiment was that the material studied was so difficult that practically every sentence could have been underlined and in fact there were some students who did just that. The mode of response was filling in the blank. Synonyms and context are more limited using this type of testing. They did find that over longer periods of reading those who underlined did better than those who repetitively read the material, but the difference was not statistically significant.

Cashen and Leicht (1970) found that when the reading material had been previously underlined experimenter on the most significant portion of the material, the students retained not only a higher percentage of underlined material but also a higher percentage of material which had not been underlined.

Rickards and August (1975) divided ninety college students randomly into six different groups. The subjects either were instructed to underline only one sentence per paragraph or they were given one underlined sentence per paragraph. One group was told to underline anything they chose to underline, another was told to underline the most
important sentences, and another was told to underline the least important sentences.

In the Rickards and August (1975) study only the group which underlined sentences entirely of their own choosing performed significantly better than any other group. All of the subjects were instructed to read at their normal reading speed and had an unlimited amount of time for which they could recall what they had just read. A list of the most important words in each sentence was given to judges who blindly matched the words or their synonyms. All of the words that were considered most important had to appear in the recall in order for a point to be scored for that sentence. Rickards and August (1975) attributed the statistical significance achieved by the underliners in their study to the fact that underlining was restricted to only one sentence per paragraph, whereas previous studies had allowed unrestrained underlining. The fact that the present study allowed unrestrained underlining but found a significant difference using the significance of difference between two proportions raises two possibilities. Perhaps the significance obtained by Rickards and August (1975) was due to superior scoring techniques based on the students' ability to recall whatever they deemed important rather than the fill-in-the-blank type of scoring techniques used in previous studies not finding a significant difference between
underlining and repetitive reading. Quester attributes much of their success to the fact that every word of each response is analyzed rather than attempting to squeeze complex attitudes of people into little blanks. The second possibility is that discussion does not contribute as much to recall as repetitive reading. In summary, if the superiority of the underlining groups in the Rickards and August study and in the alternate scoring technique used in this research was not due to superior testing based on free recall, then discussion does not contribute as much to recall as repetitive reading.

Evidence that both the alternative scoring techniques were superior and that discussion did not contribute as much to recall as underlining is twofold. First, there is agreement of the significant differences in the multiplicity of alternative scoring techniques. Second, the list of words missed by only the discussion group is evidence that the discussion group pursued tangents of personal interest rather than concentrating on learning the material studied. The complete list of lexical entries overemphasized by the discussion group was "and," "on," "their," and "us." This is strong evidence for an overemphasis on people and self rather than on the ideas presented in the material which they studied. The ideas which were underemphasized by the discussion group but recalled with proper emphasis by the underlining group are...

The long list of lexical entries properly emphasized by the underlining group but underemphasized by the discussion group also includes words which are the building blocks of ideas pertinent to the scientific study of religion, political science, sociology, history, literature, and many other subjects.

The second hypothesis was that both groups would say they could answer more questions after studying by underlining than by discussion. The reverse of this proved to be the case. More examinees said they could learn better by discussion than by underlining. Glover, Zimmer, Filbeck, and Plake (1980) demonstrated that average college students could be taught to identify the semantic base of literature by feedback on underlining and that this would significantly increase their score on standardized reading comprehension tests. This researcher hypothesizes that students who do not understand a piece of
expository prose may falsely assume they are getting feedback concerning the contents during discussion when they are in fact only getting feedback which reinforces their prejudices contrary to the content of the material being studied.

The third hypothesis said the proportion of significant proportions obtained by comparing all writings of all examinees with the material studied would be larger than the proportions of significant proportions obtained by comparing all writings of all examinees with the Brown University Standard Corpus of Present-Day Edited American English. This was proven to be true with p<.01. This is one of the most important findings of this dissertation. College students enrolled in Bible classes in the North Central portion of Texas do learn the Bible when they study it. Pearson correlations also supported this finding. Whether studying is by discussion or underlining, there is an extremely high rounded Pearson correlation of .84 for both groups between what they recalled and the material they studied even after the proportions in the material studied and the recall writings had been divided by the proportions in the Brown University Standard Corpus of Present-Day Edited American English. Pearson correlations before division were in excess of .9. Mayer (1984) had cognitive explanations and a multiplicity of studies to support the concept that underlining and structure
analysis such as outlining improved recall and integrated comprehension. A number of researchers addressed the ability levels of the subjects. Taub (1984) found underlining aided recall in subjects who obtained high vocabulary scores on the Wais. Underlining was not significant for subjects with low vocabulary scores. Crouse and Idstein (1972) found underlining improved recall for slow, medium, and fast learners, with the greatest improvement among the fast learners. Johnson and Wen (1976) studied the effects of underlining correct as well as extraneous material. Best recall scores were obtained with the least extraneous material. Additionally, students with grade averages above the class median obtained higher recall scores. A number of researchers found that not only did underlining aid recall of highlighted material, but also non-underlined sub-points (Rickards and August, 1975; Brady and Rickards, 1979; and Cashen and Leicht, 1970).

In light of the Mayer insights into cognitive processes, it is possible that this significant improvement by only the higher ability examinees is caused by the fact that more able examinees underline the major points and are able to recall the non-underlined subpoints. Perhaps the higher ability examinees are using underlining as a means to facilitate integrated comprehension beyond recall.

This is probably the reason why the significance of difference between two proportions was able to show the
superiority of the underlining group over the discussion group when Pearson's correlation could not. Pearson correlation is highest when an increase in one variable causes a mathematically predictable increase in the other variable. The significance of difference between two proportions is effective in non-linear as well as linear relationships.

Since Quester's formulas are commercial secrets, a full Quester analysis was not available on these data. One of the techniques used in the doctoral dissertation of Quester's president grouped writings into four dimensions which accounted for 93 percent of the variance in the writings of twenty-three organizations. Using this technique, no significant difference was found between the writings of the Bible students in North Central Texas with the Bible portion they studied in any of the four dimensions used by Quester.

This dissertation is the first known study to use the significance of the difference between two proportions to determine how well students can recall textual material. Between the initial and final proposal for this dissertation, Quester advised that a major problem would be that the amount of textual material studied by the students was small for making an accurate statistical analysis. Quester has found their best results when the sample size for each individual response was twice the size of the
material used as a standard for this study. By using responses that are at least 2000 words long, Quester is able to use as few as half the number of subjects required by other statistical techniques and still get valid and reliable data. Stone and the other authors of The Harvard General Inquirer believe that, "a thousand-word document will thus give a rough guideline" (1966, 219). It was not possible for this experiment to use responses to material greater than a thousand words and yet control the learning environment. This experiment needed to be accomplished in one fifty minute class period. Longer times might have biased the sample to only students of professors willing to allocate longer periods of time away from their regular studies. It is strongly recommended other researchers devise a means of testing various learning techniques which can be incorporated into the regular assignments of the students. In this manner, the learning situation outside of the classroom and the normal homework can be incorporated into the experiment. This way a one hour class period might be used exclusively for recall, instead of as a period of time for introduction of the test, learning, and recall.

All of the data used in hypotheses 1 and 3 were analyzed by Quester in addition to being analyzed by the non-Quester techniques explained in the procedure portion of this study. Quester found that out of all of the studies
which it has ever done the results of this study are significantly different because the normative scale results are significantly larger. Quester is accustomed to obtaining attitudinal data which can be grouped into normative, rational, emotional, and academic areas of life. Quester had never seen such an emphasis on the normative area of life. All of their previous studies had achieved approximately a .4 normative level on the Quester scale. Both the Bible portion studied and the writings of most students in this study consistently scored near the .7 level in the normative aspect. Such significant findings are another strong indication that higher education courses in Bible study do make a unique academic contribution to an important and otherwise neglected area of a person's life. The President of Quester said this was an extremely interesting indication that the students were actually learning normative material. Obviously, some students in the discussion groups did not learn some of the important attitudes in the Bible because their writings were more religious than the Bible portion they studied. Some of them scored as high as .88, whereas the Bible scored .69 on this aspect. This is probably partially due to the fact that when people without full knowledge discuss something they often overemphasize some things they think they understand and underemphasize the things they know they do not understand.
Another discovery in the course of this study is that the significance of difference of two proportions can be used to pinpoint which portions of material studied have been overemphasized or underemphasized in the recall of students. Every word recalled by every student was tallied for all of the statistics used in this study.

According to informal reports from the professors administering the study, the process of reading for a specified period of time using a learning technique for another specified period of time and then attempting to write everything the student could recall did not cause a problem for any examinee. A questionnaire was given after the recall period to college students who participated in this study and to non-students who took pretests of a similar nature during the formulation and validation of the test used in this study. In both the pre-test and the actual study, most examinees showed a high level of acceptance of test but a lack of understanding of its purpose and the ability to grade it.

According to the professors administering the study, the students who had demonstrated the greatest capabilities in other areas were still writing at the end of the twenty-five minutes allowed for recall while others began to stare at the walls after ten minutes or more. This observation may be related to the intelligence effects findings of Taub (1984) in elderly people and those of Crouse
and Idstein (1972) in young adults. Their more intelligent examinees had significantly better recall after underlining. However, underlining did not increase recall for less intelligent examinees.

The number of words written per student per minute is an indicator as to the superiority of underlining over discussion. The 48 students who studied by discussion wrote a total of 6,104 words for a total of 127.17 words per student, or 5.0 words per minute. The 65 students who studied by underlining wrote a total of 13,408 words for a total of 206.28 words per student, or 9.4 words per minute. One contributor to this outstanding, superior performance is that activity begets activity. Discussion is a partly active and principally passive activity. Good underlining demands non-stop concentration. It provides visible feedback of constant participation in whatever aspect of the reading is most interesting to the learner. Group discussion requires the learner to either focus on the good or bad ideas of others, concentrate during periods of non-participation, or rapidly switch between sometimes unrelated ideas of others and what is most interesting to the learner. Discussion is also limited to the rate of speech. Learning by underlining is limited by the reading rate of the learner. The reading rate is usually much higher than the speaking rate. Hartley, Bartlett, and Branthwaite (1980) analyzed 22 previous studies
concerning underlining. They found a preponderance of evidence that proper underlining can have a positive effect on recall, but that long-term retention and comprehension had not been adequately studied.

It is possible that when students discussed the material they began to develop and accurately grasp concepts concerning it. The grasping of these concepts may have interfered with the recall of these students so that they could not recall in correct proportion the major topics in the material which they studied.

One obvious conclusion of this research is that Bible study in higher education is highly academic. The close affinity of the portion of the Bible studied and the recall writings of the students in both groups in sharp contrast to the wide variation between these same recall writings and the Standard Corpus of Present-Day Edited American English was so great that for anyone to claim learning of the material had not taken place would demand strong contrary evidence.

In order to determine whether the significant differences between the discussion and underlining groups were due to the socio-economic background of the examinees, or the learning technique, the recall writings of each learning technique group were split into those writings by examinees above and below the socio-economic mean and median of all examinees participating in this study.
The lower socio-economic group chosen from both learning technique groups correctly recalled one more word than the higher socio-economic group. This small difference of one word out of a 391 word dictionary is not significant according to the significance of difference between two proportions.

In the background and significance of this study, the value of research was mentioned. Especially emphasized was the need to discover new measurements to ascertain the extent of learning of expository prose in a class purporting to be teaching the Bible, or any other subject, dependent upon an expository prose textbook. The difficulty of success in such research is underscored by the fact that out of seven studies which found underlining to make a significant contribution to recall or comprehension, three were second studies by research groups who did not find significance in their first study. In spite of the small contribution of this and other studies, the response of a particular reader to literature still remains a highly perplexing issue. In addition to the statistics proposed and implemented in this study, weeks were spent implementing other statistics. These other statistics were then put through thousands of comparisons. Nothing was found which was more effective than the originally proposed significance of difference between two proportions. Quester has probably made the greatest progress towards
understanding a reader's response to literature, but their formulas are commercial secrets. According to the President of Quester, Quester must have a sample size of about two thousand words in order to achieve reliability and validity. This study was limited to 974 words in the material studied, only a fraction of that in the recall writings of each examinee, and the first known application of these statistics to recall writings. This sample size was large enough to find blatantly obvious differences when the significance of the difference between two proportions was used.

The same procedures agreed with a trained linguist and Bible professor when they were asked to find the superior groups of responses. But these procedures could not find differences when asked to evaluate responses which were a fraction of the size of the 974 word original. The significance of difference between two proportions used in this study adequately describes a true superiority of underlining over discussion for the purposes of recalling material studied. It also showed that both groups had recalled a significant amount of the material studied when compared to a large database which correctly predicts proportionate use of many words in large samples of written American English (Kucera & Francis, 1967). The Pearson correlation coefficient between both groups and what they had studied was so high that it could not detect
the recall superiority of the group which had studied by underlining. In spite of the fact that this new application of the significance of difference of two proportions verifies the recall superiority of underlining over discussion, little if any information concerning a particular reader's response to literature has been added by this study. The computationally intensive techniques used in this study are neither valid nor reliable when used with the small amount of data which can reasonably be expected to be supplied by one reader.

Recommendations for Further Study

Discussion and underlining are only two of many learning techniques. Since these techniques performed adequately on the 113 subjects involved in this study, it is recommended that similar learning techniques be used in other studies with a large number of subjects to determine their effectiveness.

In order to maintain an unbiased sample, it was necessary for this experiment to be accomplished with unfamiliar examinees during only one fifty minute class period. A longer class period would have biased the sample by making a Tuesday/Thursday selection of subjects more attractive. It was felt that some professors would be unwilling to devote more than one class period. Finally, had more than one class period been used, intervening
variables, such as studying the material, could not have been controlled.

It is strongly recommended that other researchers devise a means of testing various learning techniques which can be incorporated into the regular assignments of the students. In this manner, the learning situation outside of the classroom and the normal homework can be incorporated into the experiment. This way a one hour class period might be used exclusively for recall, instead of a period of time for introduction of the test, learning, and recall. Since Idstein and Jenkins (1972) found that over longer periods of reading those who underlined did better than those who repetitively read the material, it is possible that benefits of some learning techniques over others might become even more pronounced over longer periods of time.

Investigation is recommended to determine if the reason that the higher intelligence examinees in previous studies showed significant improvement after underlining while below normal intelligence examinees did not improve is related to cognitive structures. Mayer (1984) and others showed that the highly intelligent examinees underlined the major points and were then able to recall non-underlined subpoints. Cognitive research is recommended to determine if the highly intelligent
examinees were using underlining as a means to facilitate integrated comprehension beyond recall.

Previous studies had found that students can identify their own effective learning styles. Studies to determine if students can discriminate between feedback, which contributes to learning, versus feedback which reinforces their prejudices are recommended. Students could be given a pretest to determine prejudicial strength before studying a variety of topics with post-study surveys. The validity of the lecture or discussion to the expository prose supposedly studied could be determined by content analysis then compared to the survey rankings of students grouped according to prejudice on the major topic in each prose studied.

Research needs to be done to determine if students would rather learn how to learn from the Bible than from a computer manual. If they do, does this learning transfer to the extent that they are able to read and follow the instructions in the computer manuals?

Implications

During the period when America grew from a group of families struggling for a living to a wealthy nation, a then contemporary English translation of the Bible was the primary textbook for reading, spelling, grammar, political science, sociology, psychology, history, literature, and many other subjects. Only a few of the students surveyed
in this research limited the expression of their interest in the Bible to devotional or religious matters. No other book has ever influenced the minds of so many people so profoundly in so many academic areas. In modern times, there has been a removal of the Bible from the academic areas of life and an attempt to push it into a purely religious or devotional corner. Many of the students expressed a desire to get the Bible out of the corner and back into the mainstream of academic pursuits. One student suggested higher level cognitive processes in Bible study such as "enalize," and "important words with Greek text." If he had ever had an opportunity to do that, he could have learned that analysis is derived from the two Greek words "ana," and "lysis."

The final and primary recommendation is that much more needs to be done to facilitate renewed use of the Bible as a textbook for serious academic study. Breaking apart Greek words is one of the many valuable learning techniques which was not explored in this study. Breaking apart the words of any language would be a good learning experience, but Greek words would contribute more to American English skills than breaking apart Chinese words because more English words are derived from Greek than Chinese. For the same reason, breaking apart Biblical words would be more valuable than choosing words at random
because ever since the printing of the first book, the Bible has consistently been a best seller.

The cognitive conclusion that students recall more written material after underlining than after discussion has been verified in previous studies with various types of written material. Other studies have found that transfer of learning is frequent. Previous studies have also found that students learn best whatever they want to learn. Fourteen years of statistical research by Barrnett (1982) have revealed 1.6 billion adherents to Christianity. The next largest religious group is nearly one-half that size, with 837 million adherents. The number of people who claim to have read and understood any computer manual is much smaller than the number of people who claim to have read and understood the Bible in spite of the fact that practically every computer or computer program comes with an instruction manual.

From secretaries just doing what they are told on inexpensive desktop computers to scientists using powerful computers to assist them in designing even more powerful computers, with few exceptions, computer operation requires the user to instruct the computer using exactly the format described in the manual. User must either recall the details from the manual or else look them up each time an instruction must be given. Recall of expository prose is therefore extremely important to learning how to use
computers. In the opinion of this researcher, most students observed by him, who were attempting to learn something which required a manual new to them, used their cognitive skills to first recall enough of the manual to allow them to begin operations either on the computer or in their mind. They then proceeded to piece together recalled material in order to understand what the instructions could and could not accomplish. As long as computer manuals remain the primary resource for those who want to learn how to use a computer, the best technique for developing recall of expository prose addressed in this study will remain an issue of primary importance.
CHAPTER REFERENCES


APPENDICES
APPENDIX A

Turbo Pascal Computer Programs to Randomly Choose Participants in the Study
program randN;

{This program chooses two groups of ten numbers between 0 and the number given by the user}

var

  N, ixl, randlst, rand2nd : integer;

begin

  write('How many items do you have from which to randomly choose?');
  readln(N);
  for ixl := 1 to 10 do begin
    randlst := random(N);
    rand2nd := random(N);
    writeln('In 1st group is ', randlst, '. In 2nd group is ', rand2nd);
  end;
end.

A Turbo Pascal computer program to randomly choose a class to participate in the study
var
  N, ixl, randlst, rand2nd : integer;
begin
  write('How many classes do you have from which to randomly choose?');
  readln(N);
  randlst := random(N);
  writeln('In 1st group is ', randlst, '. ');
end.
APPENDIX B

Letter to the Department of Biblical Studies
To the Department of Biblical Studies

Dear name,

This nation was founded on the principle that government and religion both offer a unique contribution to citizens. In recent years, some people have tried to eliminate credit for Bible study from our public institutions of learning. In a religious setting, Bible study can be of tremendous religious benefit. But even in a non-religious setting, purely academic Bible study which seeks to expose the facts in the Bible has unequaled academic value. Good research may assist educators, legislators, and judges to realize the magnitude of this academic value.

In order to encourage the academic teaching of the Bible to today's university students, we are researching how Bible students in the North Central portion of Texas are able to learn the Bible using various teaching techniques. Classes selected for inclusion in the study will be chosen at random out of all of the Bible classes being held at universities in North Central Texas. Good inferential statistics are possible only if each chosen class replies as requested. If you agree to participate in the study, your students will have an opportunity to learn both from the learning techniques and the test materials.

Students will have one minute to read the directions, five minutes to read a specific Bible portion, fifteen minutes to apply a specific learning technique, and twenty five minutes to respond in writing with what they have learned. The two specific learning techniques being researched in this study are group discussion and directed self-study. The regular class professor can either keep time or we can provide a cassette tape with timed instructions for the starting and stopping of reading, studying, and recall with the appropriate amount of silence between each instruction.

We would like to complete the study soon in order to publish the results while our state legislators and attorneys are considering the academic benefits of university Bible classes and the issues of separation of church and state. You can help make this possible by returning your
decision to participate or not participate by March 30, 1986. The study will then be conducted during one class period before or during the week of April 14, 1986. We will provide post paid return envelopes with the test materials immediately if you indicate a willingness to participate in this research. We are very appreciative of your cooperation and participation in a project we deem educationally significant. Each student's response is entirely confidential, as is the identity of any particular institution of higher learning. Your institution was selected at random from 63 colleges in North Central Texas. If you desire a report of the results, please check that space on the enclosed reply coupon.

Thank you very much for your consideration of this project which we believe will promote better understanding of the educational benefits associated with university Bible study. If you have any questions, please do not hesitate to telephone me at 817-382-0411.

Cordially,

Johnny Stovall, doctoral student and former adjunct Bible professor

James R. Miller, Dean
College of Education, NTSU
APPENDIX C

Instructions to Students
Instructions

Many discovery intensive businesses spend more than ten percent of their total resources in research and development. Your best efforts during the next hour should contribute to your understanding of the Bible and give you an insight into one way of doing educational research. It will also help us in on-going research and development of Biblical academics.

You will be given 5 minutes to read the second and third chapters of Colossians. The next 15 minutes will be spent studying that same portion of the Bible by the learning technique. After that you will have 25 minutes to write down all of the major points you can remember. The final untimed questions will help us generalize how fast others with similar educational and occupational backgrounds can learn the Bible.

Now please turn to the next page and read all you can of the next two pages in exactly five minutes.

{After reading for 5 minutes}

Now please spend 15 minutes learning all you can by the teaching method.

{After studying for 15 minutes}

Now please spend 25 minutes writing all of the major points you can remember.

{After writing for 25 minutes}

Now please give a few quick answers to the background questions, return all of the instructions, Bible portion, and your answers to your professor and make it to your next class on time. We greatly appreciate your best efforts on this research project and hope that you have learned something profitable about the Bible and your own learning style. We hope that we can provide you with the results of this research next month.
APPENDIX D

Student Recommendations for Academic Bible Study
SUMMARIES AND QUOTATIONS OF RECOMMENDATIONS

60 mentioned reading including:

2 Combined reading and underlining
4 Combined reading with discussion
4 Suggested reading in additional sources
1 Suggested soliciting written responses to the readings

83 mentioned discussion including:

2 In terms of the historical period
1 In terms of how it affects us today
1 As a literary form
1 With Divine guidance
2 Felt it helpful in clarifying personal misunderstanding

8 mentioned reference materials including:

5 Commentaries
1 Bible dictionary
1 Special articles brought to class

7 mentioned outlining including:

1 "Outline each Chapter"
1 "Written notes on board in outline form"

21 mentioned lecturing including:
3 Allowing for variation in interpretation
1 Combining with outside readings and underlining

25 mentioned underlining including:
2 "Underlining major concepts,"
1 "Underlining while reading 2nd time."

9 mentioned tests including:
2 "Quizzes over readings"
2 "Weekly quizzes,"
1 "Tests at 4 wks."

4 mentioned a literary approach:
1 "Literary analysis"
1 "Verse by verse"
1 "Chapter by chapter"
1 "Contexting"

11 suggested an historical approach including:
1 "As a sort of history/survey course."
1 "Teach as a factual history book"
1 "Creating an historical setting for each book studied."

37 mentioned study methodology including:
3 Study for content
4 Study together in a group.
5 Using study material such as guides, notes, questions
2 Word study
1 "Study the "grouping" of Books: Poetry, History, Prophecy"
1 "Studying a certain topic in the bible"
1 "Background study of text"

7 mentioned memorizing:

14 mentioned writing or note-taking including:
1 "Reviewing other peoples works who did the same writing exercise."
1 "Taking notes by listening to Lecture."

12 mentioned A/V equipment including:
1 "Its important to see ideas on paper"
2 "Tapes could be made available for some interpretation of complex yet obvious information"
2 "Movies" one student added "!!!" 
1 "TV programs on characters of the Bible, and Biblical locations
1 "Documentarys showing physical proof of bible occurrences."
1 "Maps"
6 mentioned identifying main ideas including:

1 "Summaries of main points"
1 "Each student rewrites the main points before class."
1 "Dittos on important facts"

6 mentioned research including:

1 "Background research,"
1 "Research into various doctrines and beliefs"
3 "Research papers."

3 mentioned restating:

5 mentioned review including:

1 "Review in class,"
1 "Review studying after discussion"
1 "Review weekly"

3 mentioned exegesis including:

1 "Exegeses (including chart technique)"
1 "Exegetical training"

4 suggested projects including:

1 "Sharing one another's Knowledge & Insight they have learned in the process of given Projects."

10 mentioned questions including:
"Answering students sometimes unusual questions."

"Questions & Answers from-(handouts)"

6 mentioned prayer including:

"Prayer requests"

"Prayerful devotional reading"

"Note questions when studying one might have, and find the answer by talking or praying"

2 mentioned speakers including:

"Guest speakers might be helpful & interesting if they were interdenominational."

25 mentioned procedural suggestions including:

6 "Relate to" modern "experience"

"If there were enough people, have the class with people of your own denomination"

"Gathering in a circle or outside rather than the conventional in-class and at-desks,"

3 Letting the "Holy Spirit guide" you.

"Conclusions are drawn by the class with the instructor's supervision."

"Detailed explanations"

"Praxis"

2 Student teaching

"Object lessons"
Object lessons

Role Play

Division into topics or books

If time would not permit an overview would be better than nothing.

Analyze

It should be looked at as God's word

The role (influence) religion has had on cultures, art ect.

Belief in that the bible is enerrant

3 mentioned character of teacher:

The teacher should be qualified in a Seminary

Having a spirit filled teacher

A Christian instructor should be available to assist the students.

2 general comments:

More Liberal Professors are nothing but wolves in sheeps clothing. Jesus called them False prophets. They all need to get saved then read the bible under the power and anointing of God the Holy Spirit.

Little time to think about it
APPENDIX E

The Material Studied

Colossians Chapters 2 & 3
Colossians

2 I want you to know how hard I have fought for you and for the people of the town of Laodicea and for all of those who have not met me face to face. Then their hearts will be encouraged and bound together with love. They will have all the wealth of complete understanding, knowing God's secret Christ. All of the treasures and hidden wisdom are [found] in Christ.

I am telling this, so that no one will fool you with false reasonings. Even though I am physically not there with you, I am with you in spirit. It makes me feel happy when I see how orderly and how strong your faith in Christ is.

So, continue living in Christ, just as you did when you accepted Christ Jesus as Lord. Be rooted and built up in him. Be firm in faith, as you were taught. Overflow with thankfulness.

Be careful! Don't let anyone capture you with philosophy or misleading theories that can fool you. These come from human tradition and worldly standards, not from Christ!

The totality of divinity lives embodied in Christ. You are completed in Christ. He is above every ruler and authority.
In Christ, you were circumcised with a non-human circumcision. With Christ's circumcision, you stripped away the human nature of your bodies. You were buried with Christ by immersion. You were also raised with Christ through believing in the power of God who raised Christ from death.

When you were {spiritually} dead in your sins and your human nature was not circumcised, God brought you back to life with Christ. He forgave all of our sins. God wiped away the written code with its strict orders. It was negative; it was against us. He took it out of the way. He nailed it to the cross. After God stripped away {the power of} the rulers and authorities, He showed this openly, using the cross to show His victory over them.

So, don't let anyone condemn you for what you eat or drink, or a religious festival, or the new moon holiday, or Sabbaths. These are only a shadow of the future; Christ is real. Don't let anyone who likes to act "'humble'" and to worship angels disqualify you from the race. He talks in detail about what he has "'seen.'" His unspiritual mind makes him boastful for no real reason. He is not holding onto the Head. The whole body grows the way God made it grow, held together by its joints and ligaments, getting its support from the Head.

If you truly died with Christ, leaving behind the standards of the world, why are you living as if you were
still in the world? You are making strict rules: 'Don't handle it!' 'Don't taste this!' 'Don't touch that!'
None of these things will last after they have been used for a while. They are human commands and teachings.
These things look like there is wisdom behind them. They have forced worship, false humility, and harsh treatment of the human body, but, they don't help control physical desires at all!

3 So, since you were raised with Christ, search for things that are above, where Christ is sitting at God's right side. Think about things that are above, not things on the earth. Since you have died, your life has been hidden away with Christ in God. When Christ (your life) appears, then you will appear with him in glory too.

So, kill the earthly parts: sexual sin, that which is dirty, lust, evil desire, and greed. (Greed is the same thing as worshiping a false god.) Because of these things, God's punishment will come upon people who will not obey. In the past, you used to live that way!

But now, you must put away all of those things: anger, grudges, feelings of hate, cursing, and dirty words. Do not lie to one another. Strip away that old personality, along with its habits. Put on the new personality, which is being renewed, by learning to be like the image of its Creator. Here there are no Greeks or Jews, no circumcision or uncircumcision, no foreigners, no
Scythians, no slaves or free men. Christ is everything and in everything.

So, clothe yourselves with tender feelings, kindness, humility, gentleness, and patience like God's chosen, holy people whom He loves. Put up with one another. If someone has a problem with somebody else, forgive each other as the Lord forgave you. Add love to all of these things. Love binds them all together in perfect unity. Let the peace of Christ direct your hearts. God called you in one body to peace. Be thankful. Let the teaching of Christ live among you in an abundant way. Use all wisdom to teach and warn one another with psalms, songs of praise, and spiritual songs, singing to God with your hearts. Everything you say or do should be done by the authority of the Lord Jesus. Thank God the Father through Christ.

Wives, put yourselves under your husbands' authority. This is what the Lord wants. Husbands, love your wives. Don't be harsh with them.

Children, in everything obey your parents. This is pleasing to the Lord.

Fathers, don't make your children bitter, or they will give up. Slaves, in everything obey your human masters. Don't serve them only when they are looking, like slaves who are trying to please men. Instead, serve with a sincere heart, showing respect for the Lord. Whatever you do, work at it really try hard as if it were for the
Lord, not men. Be a slave to Christ, the master. You know you will receive a reward from the Lord; it will be an inheritance. Anyone who does wrong will be paid back {for his wrong}. And, to God, everyone is the same.
APPENDIX F

Original Lexical Items With Discussion

Group Synonyms
<table>
<thead>
<tr>
<th>FREQUENCY IN ORIGINAL</th>
<th>FREQUENCY OF DISCUSSION</th>
<th>GROUP SYNONYM</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 wrong</td>
<td>2 harm</td>
<td></td>
</tr>
<tr>
<td>2 worship</td>
<td>1 adore</td>
<td></td>
</tr>
<tr>
<td>1 work</td>
<td>5 go</td>
<td></td>
</tr>
<tr>
<td>1 work</td>
<td>3 writing</td>
<td></td>
</tr>
<tr>
<td>1 words</td>
<td>1 talk</td>
<td></td>
</tr>
<tr>
<td>3 wisdom</td>
<td>2 knowledge</td>
<td></td>
</tr>
<tr>
<td>1 whole</td>
<td>1 entire</td>
<td></td>
</tr>
<tr>
<td>1 whole</td>
<td>1 sound</td>
<td></td>
</tr>
<tr>
<td>1 whole</td>
<td>1 total</td>
<td></td>
</tr>
<tr>
<td>1 whole</td>
<td>1 universal</td>
<td></td>
</tr>
<tr>
<td>1 whatever</td>
<td>5 any</td>
<td></td>
</tr>
<tr>
<td>1 wealth</td>
<td>1 means</td>
<td></td>
</tr>
<tr>
<td>1 wealth</td>
<td>2 treasure</td>
<td></td>
</tr>
<tr>
<td>4 way</td>
<td>1 path</td>
<td></td>
</tr>
<tr>
<td>4 way</td>
<td>1 road</td>
<td></td>
</tr>
<tr>
<td>1 want</td>
<td>1 lack</td>
<td></td>
</tr>
<tr>
<td>1 want</td>
<td>5 need</td>
<td></td>
</tr>
<tr>
<td>1 use</td>
<td>1 advantage</td>
<td></td>
</tr>
<tr>
<td>1 understanding</td>
<td>1 sense</td>
<td></td>
</tr>
<tr>
<td>1 try</td>
<td>2 strive</td>
<td></td>
</tr>
<tr>
<td>1 truly</td>
<td>2 quite</td>
<td></td>
</tr>
<tr>
<td>1 touch</td>
<td>5 concern</td>
<td></td>
</tr>
<tr>
<td>1 touch</td>
<td>1 contact</td>
<td></td>
</tr>
<tr>
<td>1 touch</td>
<td>1 move</td>
<td></td>
</tr>
<tr>
<td>1 touch</td>
<td>1 reach</td>
<td></td>
</tr>
<tr>
<td>1 think</td>
<td>13 believe</td>
<td></td>
</tr>
<tr>
<td>1 think</td>
<td>1 ponder</td>
<td></td>
</tr>
<tr>
<td>1 thing</td>
<td>2 matter</td>
<td></td>
</tr>
<tr>
<td>1 thing</td>
<td>1 unit</td>
<td></td>
</tr>
<tr>
<td>1 tender</td>
<td>2 gentle</td>
<td></td>
</tr>
<tr>
<td>1 tender</td>
<td>3 kind</td>
<td></td>
</tr>
<tr>
<td>1 tender</td>
<td>1 offer</td>
<td></td>
</tr>
<tr>
<td>1 teachings</td>
<td>1 doctrine</td>
<td></td>
</tr>
<tr>
<td>1 teach</td>
<td>5 tell</td>
<td></td>
</tr>
<tr>
<td>1 support</td>
<td>1 encourage</td>
<td></td>
</tr>
<tr>
<td>1 support</td>
<td>1 standard</td>
<td></td>
</tr>
<tr>
<td>2 strict</td>
<td>3 faithful</td>
<td></td>
</tr>
<tr>
<td>6 so</td>
<td>1 accordingly</td>
<td></td>
</tr>
<tr>
<td>6 so</td>
<td>3 therefore</td>
<td></td>
</tr>
<tr>
<td>1 sin</td>
<td>1 guilt</td>
<td></td>
</tr>
<tr>
<td>1 show</td>
<td>1 demonstrate</td>
<td></td>
</tr>
<tr>
<td>1 show</td>
<td>1 reflect</td>
<td></td>
</tr>
<tr>
<td>1 see</td>
<td>1 observe</td>
<td></td>
</tr>
<tr>
<td>1 secret</td>
<td>1 private</td>
<td></td>
</tr>
<tr>
<td>1 say</td>
<td>1 speak</td>
<td></td>
</tr>
<tr>
<td>1 right</td>
<td>1 becoming</td>
<td></td>
</tr>
<tr>
<td>1 right</td>
<td>1 claim</td>
<td></td>
</tr>
<tr>
<td>1 right</td>
<td>1 priority</td>
<td></td>
</tr>
<tr>
<td>1 reward</td>
<td>1 pay</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>1 respect</td>
<td>1 attention</td>
<td></td>
</tr>
<tr>
<td>1 respect</td>
<td>1 honor</td>
<td></td>
</tr>
<tr>
<td>1 receive</td>
<td>3 accept</td>
<td></td>
</tr>
<tr>
<td>1 reason</td>
<td>3 cause</td>
<td></td>
</tr>
<tr>
<td>1 reason</td>
<td>2 place</td>
<td></td>
</tr>
<tr>
<td>1 reason</td>
<td>1 root</td>
<td></td>
</tr>
<tr>
<td>1 really</td>
<td>1 very</td>
<td></td>
</tr>
<tr>
<td>2 real</td>
<td>6 true</td>
<td></td>
</tr>
<tr>
<td>4 put</td>
<td>2 lay</td>
<td></td>
</tr>
<tr>
<td>4 put</td>
<td>4 set</td>
<td></td>
</tr>
<tr>
<td>1 praise</td>
<td>1 celebrate</td>
<td></td>
</tr>
<tr>
<td>2 power</td>
<td>2 influence</td>
<td></td>
</tr>
<tr>
<td>2 power</td>
<td>1 might</td>
<td></td>
</tr>
<tr>
<td>2 power</td>
<td>1 strength</td>
<td></td>
</tr>
<tr>
<td>2 personality</td>
<td>1 character</td>
<td></td>
</tr>
<tr>
<td>2 personality</td>
<td>2 presence</td>
<td></td>
</tr>
<tr>
<td>3 people</td>
<td>9 man</td>
<td></td>
</tr>
<tr>
<td>2 peace</td>
<td>1 harmony</td>
<td></td>
</tr>
<tr>
<td>1 past</td>
<td>1 former</td>
<td></td>
</tr>
<tr>
<td>1 out</td>
<td>3 without</td>
<td></td>
</tr>
<tr>
<td>1 old</td>
<td>1 weak</td>
<td></td>
</tr>
<tr>
<td>3 obey</td>
<td>2 follow</td>
<td></td>
</tr>
<tr>
<td>3 obey</td>
<td>6 submit</td>
<td></td>
</tr>
<tr>
<td>1 now</td>
<td>2 already</td>
<td></td>
</tr>
<tr>
<td>1 none</td>
<td>1 nothing</td>
<td></td>
</tr>
<tr>
<td>Word</td>
<td>Frequency</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>new</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>make</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>lust</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>look</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>live</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>like</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>lie</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>let</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>learning</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>last</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>kindness</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>image</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>humble</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>human</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>holy</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>hidden</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>beginning</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>teacher</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>form</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>mold</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>produce</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>sex</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>watch</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>abide</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>dwell</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>room</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>care</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>equal</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>tale</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>allow</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>letter</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>final</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ultimate</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>goodness</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>grace</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>within</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>idol</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>sight</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>submissive</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>person</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>heavenly</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>dark</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1 here</td>
<td>1 present</td>
<td></td>
</tr>
<tr>
<td>1 help</td>
<td>1 worker</td>
<td></td>
</tr>
<tr>
<td>1 heart</td>
<td>3 focus</td>
<td></td>
</tr>
<tr>
<td>1 heart</td>
<td>1 nucleus</td>
<td></td>
</tr>
<tr>
<td>6 have</td>
<td>2 hold</td>
<td></td>
</tr>
<tr>
<td>6 have</td>
<td>7 keep</td>
<td></td>
</tr>
<tr>
<td>6 have</td>
<td>5 own</td>
<td></td>
</tr>
<tr>
<td>1 hate</td>
<td>1 spite</td>
<td></td>
</tr>
<tr>
<td>1 handle</td>
<td>2 treat</td>
<td></td>
</tr>
<tr>
<td>1 grow</td>
<td>1 raise</td>
<td></td>
</tr>
<tr>
<td>1 firm</td>
<td>1 constant</td>
<td></td>
</tr>
<tr>
<td>1 feel</td>
<td>1 suffer</td>
<td></td>
</tr>
<tr>
<td>2 faith</td>
<td>2 religion</td>
<td></td>
</tr>
<tr>
<td>2 faith</td>
<td>3 trust</td>
<td></td>
</tr>
<tr>
<td>1 evil</td>
<td>4 sinful</td>
<td></td>
</tr>
<tr>
<td>1 earth</td>
<td>1 ground</td>
<td></td>
</tr>
<tr>
<td>3 do</td>
<td>2 commit</td>
<td></td>
</tr>
<tr>
<td>3 do</td>
<td>4 practice</td>
<td></td>
</tr>
<tr>
<td>1 direct</td>
<td>1 command</td>
<td></td>
</tr>
<tr>
<td>1 direct</td>
<td>1 conduct</td>
<td></td>
</tr>
<tr>
<td>1 direct</td>
<td>1 deliver</td>
<td></td>
</tr>
<tr>
<td>1 direct</td>
<td>1 lead</td>
<td></td>
</tr>
<tr>
<td>1 direct</td>
<td>3 order</td>
<td></td>
</tr>
<tr>
<td>1 direct</td>
<td>1 plain</td>
<td></td>
</tr>
<tr>
<td>1 direct</td>
<td>9 point</td>
<td></td>
</tr>
<tr>
<td>1 detail</td>
<td>4 relate</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>death</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>control</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>control</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>control</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>continue</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>continue</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>complete</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>complete</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>capture</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>capture</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>but</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>but</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>bound</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>bound</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>back</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>away</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>anger</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>all</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>after</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>act</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>act</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>abundant</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>about</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>about</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>about</td>
</tr>
</tbody>
</table>

The list contains various words and numbers indicating their occurrences. The table format simplifies the presentation.
APPENDIX G

Original Lexical Items With Underlining Group Synonyms
<table>
<thead>
<tr>
<th>FREQUENCY IN ORIGINAL</th>
<th>FREQUENCY AS UNDERLINING</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 world</td>
<td>1 system</td>
</tr>
<tr>
<td>1 work</td>
<td>5 go</td>
</tr>
<tr>
<td>1 work</td>
<td>5 writing</td>
</tr>
<tr>
<td>1 words</td>
<td>3 talk</td>
</tr>
<tr>
<td>3 wisdom</td>
<td>5 knowledge</td>
</tr>
<tr>
<td>1 whole</td>
<td>1 entire</td>
</tr>
<tr>
<td>1 whole</td>
<td>9 total</td>
</tr>
<tr>
<td>1 whatever</td>
<td>3 any</td>
</tr>
<tr>
<td>1 wealth</td>
<td>5 means</td>
</tr>
<tr>
<td>1 wealth</td>
<td>1 money</td>
</tr>
<tr>
<td>1 wealth</td>
<td>6 treasure</td>
</tr>
<tr>
<td>4 way</td>
<td>1 manner</td>
</tr>
<tr>
<td>4 way</td>
<td>1 path</td>
</tr>
<tr>
<td>1 warn</td>
<td>1 advise</td>
</tr>
<tr>
<td>1 warn</td>
<td>1 correct</td>
</tr>
<tr>
<td>1 want</td>
<td>2 hope</td>
</tr>
<tr>
<td>1 want</td>
<td>15 need</td>
</tr>
<tr>
<td>1 want</td>
<td>1 wish</td>
</tr>
<tr>
<td>1 under</td>
<td>2 below</td>
</tr>
<tr>
<td>1 try</td>
<td>1 attempt</td>
</tr>
<tr>
<td>1 try</td>
<td>6 strive</td>
</tr>
<tr>
<td>1 touch</td>
<td>3 concern</td>
</tr>
</tbody>
</table>
1 touch
1 touch
1 though
1 think
1 tender
1 tender
1 teach
1 support
1 support
1 support
1 support
1 strong
2 strict
1 still
6 so
6 so
1 sin
1 sin
1 see
1 say
2 same
1 reward
1 respect
1 religious
1 receive
2 move
1 style
3 although
9 believe
7 gentle
9 kind
12 tell
1 authorize
2 bear
1 cherish
8 encourage
2 strengthen
3 fast
1 faithful
1 standing
1 accordingly
6 therefore
2 fall
1 vice
1 observe
1 state
2 alike
2 pay
1 attention
4 godly
2 accept
<table>
<thead>
<tr>
<th>Word</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>misleading</td>
<td>1</td>
</tr>
<tr>
<td>make</td>
<td>1</td>
</tr>
<tr>
<td>lust</td>
<td>1</td>
</tr>
<tr>
<td>love</td>
<td>4</td>
</tr>
<tr>
<td>look</td>
<td>1</td>
</tr>
<tr>
<td>look</td>
<td>1</td>
</tr>
<tr>
<td>living</td>
<td>2</td>
</tr>
<tr>
<td>live</td>
<td>2</td>
</tr>
<tr>
<td>like</td>
<td>4</td>
</tr>
<tr>
<td>lie</td>
<td>1</td>
</tr>
<tr>
<td>lie</td>
<td>1</td>
</tr>
<tr>
<td>let</td>
<td>5</td>
</tr>
<tr>
<td>learning</td>
<td>1</td>
</tr>
<tr>
<td>last</td>
<td>1</td>
</tr>
<tr>
<td>know</td>
<td>2</td>
</tr>
<tr>
<td>kindness</td>
<td>1</td>
</tr>
<tr>
<td>kindness</td>
<td>1</td>
</tr>
<tr>
<td>kindness</td>
<td>1</td>
</tr>
<tr>
<td>kindness</td>
<td>1</td>
</tr>
<tr>
<td>just</td>
<td>1</td>
</tr>
<tr>
<td>just</td>
<td>1</td>
</tr>
<tr>
<td>just</td>
<td>1</td>
</tr>
<tr>
<td>image</td>
<td>1</td>
</tr>
<tr>
<td>image</td>
<td>1</td>
</tr>
<tr>
<td>humble</td>
<td>1</td>
</tr>
<tr>
<td>human</td>
<td>7</td>
</tr>
<tr>
<td>deceptive</td>
<td>1</td>
</tr>
<tr>
<td>form</td>
<td>1</td>
</tr>
<tr>
<td>sex</td>
<td>3</td>
</tr>
<tr>
<td>devotion</td>
<td>1</td>
</tr>
<tr>
<td>appearance</td>
<td>2</td>
</tr>
<tr>
<td>watch</td>
<td>1</td>
</tr>
<tr>
<td>alive</td>
<td>1</td>
</tr>
<tr>
<td>dwell</td>
<td>2</td>
</tr>
<tr>
<td>equal</td>
<td>8</td>
</tr>
<tr>
<td>range</td>
<td>1</td>
</tr>
<tr>
<td>sit</td>
<td>1</td>
</tr>
<tr>
<td>allow</td>
<td>1</td>
</tr>
<tr>
<td>letter</td>
<td>1</td>
</tr>
<tr>
<td>ultimate</td>
<td>1</td>
</tr>
<tr>
<td>understand</td>
<td>1</td>
</tr>
<tr>
<td>compassion</td>
<td>1</td>
</tr>
<tr>
<td>goodness</td>
<td>2</td>
</tr>
<tr>
<td>grace</td>
<td>2</td>
</tr>
<tr>
<td>mercy</td>
<td>3</td>
</tr>
<tr>
<td>fair</td>
<td>1</td>
</tr>
<tr>
<td>moral</td>
<td>4</td>
</tr>
<tr>
<td>valid</td>
<td>1</td>
</tr>
<tr>
<td>idol</td>
<td>1</td>
</tr>
<tr>
<td>sight</td>
<td>2</td>
</tr>
<tr>
<td>submissive</td>
<td>3</td>
</tr>
<tr>
<td>person</td>
<td>7</td>
</tr>
<tr>
<td>Word</td>
<td>Frequency</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>holy</td>
<td>1</td>
</tr>
<tr>
<td>divine</td>
<td>1</td>
</tr>
<tr>
<td>heavenly</td>
<td>6</td>
</tr>
<tr>
<td>here</td>
<td>1</td>
</tr>
<tr>
<td>present</td>
<td>1</td>
</tr>
<tr>
<td>help</td>
<td>1</td>
</tr>
<tr>
<td>further</td>
<td>1</td>
</tr>
<tr>
<td>help</td>
<td>1</td>
</tr>
<tr>
<td>service</td>
<td>1</td>
</tr>
<tr>
<td>heart</td>
<td>2</td>
</tr>
<tr>
<td>focus</td>
<td>2</td>
</tr>
<tr>
<td>have</td>
<td>6</td>
</tr>
<tr>
<td>hold</td>
<td>6</td>
</tr>
<tr>
<td>have</td>
<td>12</td>
</tr>
<tr>
<td>keep</td>
<td>12</td>
</tr>
<tr>
<td>have</td>
<td>2</td>
</tr>
<tr>
<td>own</td>
<td>2</td>
</tr>
<tr>
<td>hate</td>
<td>1</td>
</tr>
<tr>
<td>malice</td>
<td>4</td>
</tr>
<tr>
<td>happy</td>
<td>1</td>
</tr>
<tr>
<td>cheerful</td>
<td>1</td>
</tr>
<tr>
<td>happy</td>
<td>2</td>
</tr>
<tr>
<td>glad</td>
<td>2</td>
</tr>
<tr>
<td>handle</td>
<td>1</td>
</tr>
<tr>
<td>treat</td>
<td>5</td>
</tr>
<tr>
<td>fool</td>
<td>2</td>
</tr>
<tr>
<td>deceive</td>
<td>3</td>
</tr>
<tr>
<td>firm</td>
<td>1</td>
</tr>
<tr>
<td>house</td>
<td>1</td>
</tr>
<tr>
<td>firm</td>
<td>1</td>
</tr>
<tr>
<td>solid</td>
<td>1</td>
</tr>
<tr>
<td>false</td>
<td>3</td>
</tr>
<tr>
<td>synthetic</td>
<td>1</td>
</tr>
<tr>
<td>faith</td>
<td>2</td>
</tr>
<tr>
<td>credit</td>
<td>1</td>
</tr>
<tr>
<td>faith</td>
<td>2</td>
</tr>
<tr>
<td>religion</td>
<td>2</td>
</tr>
<tr>
<td>faith</td>
<td>2</td>
</tr>
<tr>
<td>trust</td>
<td>1</td>
</tr>
<tr>
<td>face</td>
<td>2</td>
</tr>
<tr>
<td>front</td>
<td>1</td>
</tr>
<tr>
<td>face</td>
<td>2</td>
</tr>
<tr>
<td>outside</td>
<td>5</td>
</tr>
<tr>
<td>face</td>
<td>2</td>
</tr>
<tr>
<td>withstand</td>
<td>1</td>
</tr>
<tr>
<td>evil</td>
<td>1</td>
</tr>
<tr>
<td>bad</td>
<td>2</td>
</tr>
<tr>
<td>evil</td>
<td>1</td>
</tr>
<tr>
<td>curse</td>
<td>1</td>
</tr>
<tr>
<td>evil</td>
<td>6</td>
</tr>
<tr>
<td>sinful</td>
<td>6</td>
</tr>
<tr>
<td>1</td>
<td>even</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1</td>
<td>earth</td>
</tr>
<tr>
<td>3</td>
<td>do</td>
</tr>
<tr>
<td>1</td>
<td>direct</td>
</tr>
<tr>
<td>1</td>
<td>direct</td>
</tr>
<tr>
<td>1</td>
<td>direct</td>
</tr>
<tr>
<td>1</td>
<td>direct</td>
</tr>
<tr>
<td>1</td>
<td>direct</td>
</tr>
<tr>
<td>1</td>
<td>direct</td>
</tr>
<tr>
<td>1</td>
<td>direct</td>
</tr>
<tr>
<td>1</td>
<td>detail</td>
</tr>
<tr>
<td>1</td>
<td>control</td>
</tr>
<tr>
<td>1</td>
<td>control</td>
</tr>
<tr>
<td>1</td>
<td>control</td>
</tr>
<tr>
<td>1</td>
<td>continue</td>
</tr>
<tr>
<td>1</td>
<td>continue</td>
</tr>
<tr>
<td>1</td>
<td>continue</td>
</tr>
<tr>
<td>1</td>
<td>complete</td>
</tr>
<tr>
<td>1</td>
<td>complete</td>
</tr>
<tr>
<td>1</td>
<td>complete</td>
</tr>
<tr>
<td>2</td>
<td>come</td>
</tr>
<tr>
<td>1</td>
<td>clothe</td>
</tr>
<tr>
<td>1</td>
<td>chosen</td>
</tr>
<tr>
<td>1</td>
<td>capture</td>
</tr>
<tr>
<td>1</td>
<td>capture</td>
</tr>
<tr>
<td>2</td>
<td>but</td>
</tr>
<tr>
<td>Word</td>
<td>Frequency</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>bound</td>
<td>1</td>
</tr>
<tr>
<td>spring</td>
<td>1</td>
</tr>
<tr>
<td>body</td>
<td>3</td>
</tr>
<tr>
<td>band</td>
<td>1</td>
</tr>
<tr>
<td>away</td>
<td>6</td>
</tr>
<tr>
<td>off</td>
<td>6</td>
</tr>
<tr>
<td>appear</td>
<td>1</td>
</tr>
<tr>
<td>seem</td>
<td>1</td>
</tr>
<tr>
<td>anger</td>
<td>1</td>
</tr>
<tr>
<td>provoke</td>
<td>1</td>
</tr>
<tr>
<td>among</td>
<td>1</td>
</tr>
<tr>
<td>between</td>
<td>2</td>
</tr>
<tr>
<td>after</td>
<td>2</td>
</tr>
<tr>
<td>following</td>
<td>4</td>
</tr>
<tr>
<td>after</td>
<td>2</td>
</tr>
<tr>
<td>next</td>
<td>3</td>
</tr>
<tr>
<td>act</td>
<td>1</td>
</tr>
<tr>
<td>deal</td>
<td>1</td>
</tr>
<tr>
<td>abundant</td>
<td>1</td>
</tr>
<tr>
<td>generous</td>
<td>1</td>
</tr>
<tr>
<td>abundant</td>
<td>1</td>
</tr>
<tr>
<td>many</td>
<td>3</td>
</tr>
<tr>
<td>about</td>
<td>2</td>
</tr>
<tr>
<td>almost</td>
<td>1</td>
</tr>
<tr>
<td>about</td>
<td>2</td>
</tr>
<tr>
<td>around</td>
<td>1</td>
</tr>
<tr>
<td>about</td>
<td>2</td>
</tr>
<tr>
<td>concerning</td>
<td>1</td>
</tr>
<tr>
<td>about</td>
<td>2</td>
</tr>
<tr>
<td>some</td>
<td>8</td>
</tr>
</tbody>
</table>
APPENDIX H

Words Recalled in Incorrect Proportions by Low Socio-economic Group
In the following list, the proportion use of the word in the recall writing of the group is given in the first column under the word Recalled. The second column contains the ampersand sign. The third column contains the proportion of the word used in the material studied under the heading studied proportions. The fourth column contains the quoted string \( \text{zdif=} \). The fifth column contains the Significance of Difference Between Two Proportions. The last entry is the word to which the preceding proportions apply.

<table>
<thead>
<tr>
<th>Recalled</th>
<th>Studied proportions</th>
<th>&quot;zdif=&quot;</th>
<th>significance</th>
<th>word</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0813733000E-02 &amp; 9.2402464100E-01</td>
<td>zdif = -2.97</td>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.0289270000E-03 &amp; 9.2402464100E-01</td>
<td>zdif = -2.98</td>
<td>all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3517170000E-03 &amp; 4.1067761800E-01</td>
<td>zdif = -1.99</td>
<td>anyone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.4882400000E-03 &amp; 7.1868583200E-01</td>
<td>zdif = -2.62</td>
<td>as</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2441200000E-03 &amp; 6.1601642700E-01</td>
<td>zdif = -2.44</td>
<td>away</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3254930000E-03 &amp; 4.1067761800E-01</td>
<td>zdif = -1.98</td>
<td>by</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.4068700000E-04 &amp; 5.1334702300</td>
<td>zdif = -2.23</td>
<td>everything</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.8661800000E-03 &amp; 6.1601642700E-01</td>
<td>zdif = -2.43</td>
<td>from</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.1103000000E-04 &amp; 4.1067761800E-01</td>
<td>zdif = -1.99</td>
<td>god's</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5958370000E-03 &amp; 6.1601642700E-01</td>
<td>zdif = -2.43</td>
<td>have</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.4620170000E-03 &amp; 9.2402464100E-01</td>
<td>zdif = -2.97</td>
<td>he</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6220600000E-03 &amp; 7.1868583200E-01</td>
<td>zdif = -2.64</td>
<td>human</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3517170000E-03 &amp; 6.1601642700E-01</td>
<td>zdif = -2.45</td>
<td>I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.7034330000E-03 &amp; 4.1067761800E-01</td>
<td>zdif = -1.98</td>
<td>if</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word</td>
<td>Probability Difference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>its</td>
<td>-2.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>let</td>
<td>-2.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>like</td>
<td>-2.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lord</td>
<td>-2.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>love</td>
<td>-1.98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>-2.98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of</td>
<td>-2.64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>one</td>
<td>-2.22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>put</td>
<td>-1.98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>so</td>
<td>-2.45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>that</td>
<td>-2.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>them</td>
<td>-2.22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>these</td>
<td>-2.44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>they</td>
<td>-2.63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>things</td>
<td>-2.81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>this</td>
<td>-2.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to</td>
<td>-2.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>way</td>
<td>-1.99</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>were</td>
<td>-2.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>when</td>
<td>-2.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>who</td>
<td>-2.44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with</td>
<td>-2.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>you</td>
<td>-2.56</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
REFERENCES


