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ABSTRACT
                Three hypotheses concerning the degree to which
understanding of various conjunctions is related to reading
comprehension were tested. Four instruments, two standardized tests
and two designed for the experiment, were administered to a
stratified sample of Mansfield, Ohio, fourth-grade students. The
first hypothesis--that there is a significant relationship between
ability to identify relationships that conjunctions signal and
reading comprehension--was accepted on the basis of significant
correlations on all measures. The second hypothesis--that there is a
significant difference in the difficulty of various conjunctions--was
supported through item analysis, binomial test, and chi-square
indices of relative difficulty for various conjunctions. The third
hypothesis--that significant differences in comprehension of
conjunctions exist for boys and girls, for socioeconomic levels, and
for intelligence levels--was also accepted. Among the implications of
the study were the suggestions that more attention be given to
teaching conjunctions and the relationships they signal and that more
attention be given to the role of conjunctions in assessing the
readability of materials. Tables and a bibliography are included. (MS)

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THE RELATIONSHIP BETWEEN UNDERSTANDING GRAMMATICAL

CONJUNCTIONS AND READING COMPREHENSION

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U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
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CHAPTER I

UNDERSTANDING CONJUNCTIONS AND COMPREHENSION

Comprehension has been described as, "to grasp with the mind,"[1] "thinking,"[2] and "reading to interpret."[3] Factors that are thought to be related to comprehension range from understanding words, to thought units, to paragraphs, to total selection.[4] Among others, Ogden and Richards point out that words mean nothing by themselves. Only when a thinker makes use of them do they stand for anything or, in one sense, have meaning.[5] To understand meaning the reader must be able to read beyond the individual words to the relationships they signal.[6] The grammar of language helps to convey meaning. Word order, word form, and structure words enable the reader to identify individual sentence

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[1] Emmett Albert Betts, "Research on Reading as a Thinking Process," Journal of Educational Research. (September, 1965), p. 1.

[2] Donald D. Durrell, Improving Reading Instruction, (Yonkers on Hudson: World Book, 1956), p. 10.

[3] James F. Kerfoot, "Problems and Research Considerations in Reading Comprehension." Reading Teacher. (January, 1956) p. 250-256.

[4] Ibid.

[5] Charles K. Ogden, and I. A. Richards, The Meaning of Meaning. (New York: Harcourt, Brace and World, Inc., 1952), p. 152.

[6] Sumner Ives, "Some Notes on Syntax and Meaning." Reading Teacher. (December, 1964), p. 179-183.

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elements and to determine how the elements relate to each other. Lefevre says: "My basic assumption is that reading must be regarded as a language-related process; reading and the reaching of meaning must therefore be rigorously studied in relation to language."[7]

Although reading comprehension has been related to many factors little concrete evidence exists to guide reading instruction. Little is known about which abilities will enable the reader to comprehend. Teachers are unsure what affects it. College instructors have difficulty preparing teachers because their understanding is limited. Knowledge is needed about what a student who "understands" does as opposed to one who does "not understand." Until more adequate descriptions are evolved, there will be difficulty in guiding children.

Bormuth[8] found that many students never sufficiently master the skill of reading comprehension to the extent that permits them to acquire the knowledge contained in their instructional materials. This finding is attributed to the ineffectiveness of instruction in reading comprehension. Coleman[9] reports that school instruction has little influence upon children's acquisition of skills, such as reading comprehension.

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[7]Carl A. Lefevre, Linguistics and the Teaching of Reading. (New York: McGraw Hill Book, 1964), p. xii.

[8]John R. Bormuth, "The Effectiveness of Current Procedures for Teaching Reading Comprehension." A paper presented to the Annual Convention of the National Council of Teachers of English in Milwaukee, Wisconsin, November 29, 1968.

[9]J. S. Coleman et al. Equality of Educational Opportunity. (Washington D.C.: U.S. Government Printing Office, 1969.

Most first grade children learned to recognize words, according to The
Cooperative Research Program in Primary Reading Instruction,[10] but the
real deficiency was in understanding. Thus one of the most important
aspects of reading remains largely a mystery.

Chomsky[11] believes that both the form and meaning of a sen-
tence are determined by syntactic structures which are related to the
sentence through interpretation. This factor lends the property of abstract-
ness to grammatical structure. A language is defined by Chomsky as a
set of semantic-phonetic percepts, of sound meaning correlations; the
correlations being determined by the intervening syntactic structure.
There are two aspects of syntactic structure. It consists of surface
structure that underlies the semantic interpretation. Deep structure is
an abstract representation in the mind which rarely is directly related to
the phonetic signal.

Research indicates that children use structure words before
they are able to relate meaning to the structures they are using. Piaget[12]
found that children used connectives in their own language before they
understood the corresponding meaning. Vygotsky[13] found evidence that

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[10]Robert Dykstra, "The Cooperative Research Program in Pri-
mary Reading." Reading Research Quarterly, (Fall, 1968).

[11]Noam Chomsky, "Language and the Mind." Psychology
Today. (January, 1969), p. 48.

[12]J. Piaget, Judgment and Reasoning in the Child. (London:
Routledge and Kegan Paul, 1928), p. 60.

[13]L. S. Vygotsky, Thought and Language. (Boston: Massachu-
setts Institute of Technology, 1940), p. 50.

children learn spoken language through imitation, and that they attach meanings to the structures they are using at a later time. This evidence corroborated Piaget's conclusions.

Bereiter and Engleman[14] are concerned with the development of language as an instrument of learning and thinking in their preschool program. They point out that they do not care so much that a child learn nouns such as ball, but they make sure that their students can understand such words as not and or, which they consider to be some of the most powerful logical tools in the language. Hurlock[15] points out that to per-ceive meanings the child must be able to see relationships. She also discusses the fact that children's ability to see cause and effect relation-ships develops gradually, and children under seven or eight years of age have inaccurate and incomplete concepts of causality.

The first words used by children are nouns, verbs appear second, then adjectives and adverbs appear after the age of one and one-half years. Prepositions and pronouns are the last major parts of speech to appear in the child's language. Nouns predominate in his speech until two years of age when he begins to use an increasing number of verbs, articles, conjunctions, prepositions, and pronouns.[16] The largest

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[14]Carl Bereiter, and Seigfried Engleman. Teaching Disadvan-taged Children in the Preschool. (Englewood Cliffs, New Jersey: Prentice-Hall, 1966), p. 25.

[15]Elizabeth B. Hurlock. Child Development. (New York: McGraw-Hill Book Company, Inc., 1956), p. 370.

[16]Hurlock, op. cit., p. 187.

changes in frequency of use of all parts of speech, except adverbs,
occurred between one and one-half and two and a half years as shown in
studies by McCarthy[17] and Smith.[18] The percentages of pronouns, ad-
jectives, verbs, prepositions, and conjunctions increased during this
period while the percentage of nouns and interjections decreased.

Stability in distribution of the parts of speech used by children
seems to increase after three years of age. Templin[19] studied the per-
centages of various parts of speech used by subjects three to eight years
of age with the following results; nouns 38 percent, verbs 26 percent,
adjectives 12 percent, adverbs 7 percent, pronouns 6 percent, conjunc-
tions 1.5 percent, prepositions 3 percent, interjections 3 percent, and
miscellaneous 2 percent.

Apparently, conjunctions are among the parts of speech least
used by young children. Understanding of these words develops some-
what later than use. However, conjunctions are considered sufficiently
significant in reasoning by some authorities to warrant direct teaching
of them.

Conjunctions are among the most common words in the English
language. They are connectives which serve to join words, phrases, or

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[17]Dorthea A. McCarthy. "The Language Development of the
Preschool Child." University of Minnesota Institute of Child Welfare
Monograph, (1942), No. 4).

[18]M. E. Smith, "An Investigation of the Development of the
Sentence and the Extent of Vocabulary in Young Children." University
of Iowa Studies in Child Welfare, (1926), 3, No. 5).

[19]Mildred C. Templin, Certain Language Skills in Children.
(Minneapolis: The University of Minnesota, 1957), pp. 102.

sentences. Relationships within and between sentences are signaled by conjunctions.[20] Strang, McCullough, and Traxler[21] suggest that relationships assume importance when students encounter unfamiliar words or meanings. Conjunctions derive the major part of their meaning from the grammatical functions they indicate. The relationships of addition, contrast, explanation, consequence, and choice are developed by conjunctions.[22] The anticipated ending of the sentence in this example is changed by a conjunction: We were going to the fair, but our car wouldn't start so we stayed at home.

Robertson[23] studied pupils' understanding of connectives which include conjunctions in reading. She found a significant relationship between a child's understanding of connectives in reading and the factors of sex, mental age, listening, reading, and written language. A significant increase from grade to grade in the pupils' understanding of connectives was found in her study.

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[20]Edgar Schuster, _Grammar, Usage, and Style_. (New York: Webster Division of McGraw-Hill Book Company, 1965), p. 350.

[21]Ruth Strang, Constance M. McCullough, Arthur E. Traxler, _The Improvement of Reading_. (New York: McGraw-Hill Book Company, 1967), p. 303.

[22]Schuster, _op. cit._, p. 349.

[23]Jean A. Robertson, "Pupil Understanding of Connectives in Reading." _Reading Research Quarterly_. (Spring, 1968), pp. 387-415.

Card and McDavid[24] investigated the frequency of structure words, conjunctions are included in this class of words, in the writing of children and adults, and found that children use certain conjunctions frequently, while able adult writers use others. For example, an adult might choose _as_, or _since_, while children favor the one word, _because_. This suggests that mature, adult writers use conjunctions differently than younger less mature writers.

Bormuth[25] suggests that when comprehending, the reader sorts words into part of speech categories, which in turn determines phrase structure and semantic meaning. The meaning of words in sentences is modified by other words and phrases. When a word is classified as a part of speech, the operation of that word in the syntax of the sentence is determined; within the constraints of the category to which it is assigned. According to this theory, when a reader classifies a word as a conjunction he tends to interpret the word in terms of this classification when he encounters it in reading.

This study investigates the relationship between children's ability to understand conjunctions and reading comprehension. The relationship of comprehension and understanding conjunctions will be explored in order to develop a better understanding of both. This study focused on

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[24]William Card and Virginia McDavid, "Frequencies of Structure Words in the Writing of Children and Adults," Elementary English. (December, 1965), pp. 878-882.

[25]John R. Bormuth, "Teaching Sentence Comprehension," A paper presented at the Symposium on Reading as a Psycholinguistic Process, American Educational Research Association, February, 1967.

one member of the class of connectives, conjunctions.

Robertson,[26] who concentrated on a broader class of connectives, which included conjunctions, selected her sample from a survey of three major reading series. Robertson related understanding of connectives to achievement. The developmental aspect of understanding connectives was also explored in her study, as she used subjects from fourth, fifth, and sixth grades. The connectives test designed for her study approached the problem of understanding connectives from a different point of view than the tests used in this study. Grammatical usage of connectives was emphasized in the Robertson stud' while this study emphasized meaning of conjunctions. The Card and McDavid[27] study investigated connectives used in children's writing, while this study concentrated on the use of conjunctions in reading content.

The general objective of this study was to determine if an understanding of various conjunctions is related to reading comprehension. The following hypotheses are tested to accomplish this general objective:

1. There is a significant correlation between a subject's ability to identify the relationships that conjunctions signal and his reading comprehension.

2. There is a significant difference in the difficulty of various types of conjunctions, for example and is easier to understand than for.

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[26]Robertson, op. cit., p. 392.

[27]Card and McDavid, op. cit., p. 878.

3. There is a significant relationship between understanding conjunctions and demographic variables of sex, socioeconomic level, and intelligence.

   (a) Girls identify the relationships that conjunctions signal better than boys.

   (b) Subjects from higher socioeconomic levels identify the relationships conjunctions signal better than students at low socioeconomic levels.

   (c) Subjects with higher intelligence identify the relationships conjunctions signal better than subjects with lower intelligence.

The general design of this study included development of a multiple choice instrument which tested comprehension of conjunctions that signal the most commonly used relationships of addition, contrast, explanation, consequence, and choice. These conjunctions were selected through consulting major frequency or usage lists. A cloze test was developed as well, which included three passages; one with a high number of conjunctions, one with about half that number of conjunctions, and a passage with no conjunctions. In addition, two standardized tests were used, one to test reading achievement, and the other to measure mental maturity.

The sample for this study was composed of a stratified random sample of fourth grade students. The four instruments were administered to these subjects in order to collect data for analysis.

These definitions were developed for use in this study on the basis of the studies reviewed, which were basic references in the fields of reading comprehension, English grammar, and child development.

Understanding or comprehension was defined as the process in reading by which the reader derived meaning from the printed message on the paper.

Conjunctions are empty words, structure words. Conjunctions are connectives that serve to relate or join words, phrases and sentences.

A sentence in this study was defined as a word or group of words beginning with a capital letter and ending with a period, question mark, or exclamation mark.

A phrase is a group of two or more words. This group of words forms a syntactic unit which is read or spoken together.

The term syntax was used to discuss the ordering of words in a sentence.

Mental ability was the term used to describe the inherent think-capacity of the individual.

Achievement was defined as the knowledge acquired as a result of attending school.

Socioeconomic level was the term used to describe the social and cultural level of the students in the study as determined by the United States Government when designating schools as recipients of Title One E.S.E.A. assistance.

This study has implications for theory and practice. The outcomes of this study may provide for improvement of instruction. If there is indication that the relationships signaled by various conjunctions are difficult to comprehend, these relationships could become a focal point of instruction. Conjunctions which are difficult to comprehend could be introduced with instruction aimed at making them more comprehensible. Also, evidence regarding the role of conjunctions in reading comprehension may suggest which are important for the teacher to emphasize in oral reading instruction. Currently, teachers tend to correct all oral reading errors as if they were of equal importance; however, if some errors are more important than others, the teacher may safely ignore the less important errors. This policy of ignoring less significant errors may help the child's attitude toward reading which is often damaged by excessive criticism.

This study may provide direction for preparing instructional materials. Currently, five basic types of control are used in preparing reading materials: number of words, sound-letter associations, interest, literary, and structure of language. This study will help to determine those conjunctions which are difficult to understand so that they can be avoided in preparing instructional materials, or if they are used, special instruction may be provided to help the student. The conjunctions which are found to be easier to understand may be used freely in writing instructional materials. The findings may have implications for controlling readability level of materials. Currently, formulas for controlling readability measure the use of specific vocabulary words, length of sentences, and prepositional phrases. Control of the number and use of specific

vocabulary words, length of sentences, and prepositional phrases. Control of the number and use of specific conjunctions as an index of readability may be indicated by the findings of this study.

The comprehension of disadvantaged students is a particular problem for teachers of reading. When answering questions disadvantaged children frequently respond with answers which appear to be unrelated to the questions asked. Teachers often assume that children are not paying attention. As the child moves through school this problem increases. A recent study directed by Marcus[28] brings new insight to this problem. He found that disadvantaged children heard each word, understood the meaning of each word, but focused on key words in the question which caused them to overlook the relationship of words within the question. They were unaware of syntactical structure and the use of conjunctions. Thus, this study may provide some direction for teaching disadvantaged children to comprehend reading content.

Further research may be an outgrowth of this study. The proposed study will further knowledge of the comprehension process which will suggest other areas of research that may be profitable for future study. For example, studies regarding the relationship between comprehension and other parts of speech may be found to be profitable. The instruments developed for this study may be used for studying evaluation of comprehension, which is a major problem of evaluation. A comparison of written and spoken use of conjunctions may be a

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[28] "Why Can't They Understand," Reading Newsreport. Vol. III. (April, 1969), pp. 32-35.

profitable study since it is often assumed that they are the same. The relationship of conjunctions to surface structure and to deep s ructure would be a worthwhile study. Chomsky[29] says that "the syntactic component must generate deep and surface structures for each sentence, and must interrelate them." Since conjunctions are structure words which relate to both syntax and semantics this would seem a lucrative area of research.

Summary

On the basis of current knowledge regarding reading comprehension and conjunctions there exists a theoretical basis for exploring the relationship between these two variables. This relationship is explored in the current study through the use of four instruments designed to collect data regarding the variables cited. The relationships and the extent of the relationships were explored through the data derived from these sources.

The study is organized in the following manner: Chapter II presents the review of the literature; Chapter III presents information regarding test selection, test development, sample, population, and data collection; Chapter IV presents an analysis of the data, and Chapter V summarizes the study and discusses the conclusions.

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[29]Chomsky, op. cit., p. 49.

CHAPTER II

THE DIMENSIONS OF COMPREHENSION

Teacher concern for reading comprehension has grown from a point of little acknowledgment and little research to a point of major concern. In discussing the many faces of reading comprehension, Smith points out that "reading instruction had no comprehension face at all until about fifty years ago. The corpus of reading instruction up until 1915 to 1925 was that of teaching word recognition. When a child had learned to pronounce the words in reading, the teaching objective had been met."[1] The purpose of this chapter is to explore the area of comprehension, and to present brief reviews of research and literature related to the area. The related problem areas of conjunctions commonly used in English, as well as the role of syntax in reading comprehension, will be explored.

Comprehension

Reading Comprehension in History

The problem of reading comprehension has grown as the concept of reading instruction has grown. Smith[2] found in historical research that

[1] Nila Banton Smith. "The Many Faces of Reading Comprehension," The Reading Teacher. (December, 1969), 23, p. 253.

[2] Nila Banton Smith, American Reading Instruction. (Newark, Delaware: International Reading Association, 1962), p. 91.

one of the early references to reading comprehension was used in the
Webb Third Reader.[3] The use of the word in this situation indicated an
increased attention to meaning in reading. Before 1900 when emphasis
in reading was on the pronounciation of words, very little attention was
paid to comprehension. In the Sixteenth Yearbook of the National Society
for the Study of Education, Gray[4] used the term reading comprehension to
denote the obtaining of meaning through reading. This concern for mean-
ing is education multiplied during the early 1900's. Francis W. Parker
gave expression to concern for understanding in the following quotation:

> Many of the grossest errors in teaching reading
> spring from confounding the two processes of at-
> tention and expression. Reading itself is not
> expression any more than observation is hearing--
> language is expression.[5]

Huey writing in The Psychology and Pedagogy of Reading[6] also expressed
concern for though getting rather than mere word saying in the reading
process.

One of the major aims of the silent reading methods that was
researched by Buswell was the development of comprehension. Buswell
says:

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[3]Russell J. Webb, Webb's Normal Reader, No. 3 (New York:
Sheldon, Lamport, and Blakeman, 1856).

[4]William S. Gray, The Relation of Silent Reading to Economy
in Education. Sixteenth Yearbook, Part I, National Society for the Study
of Education, (Bloomington, Illinois, Public School Publishing Company,
1917), p. 28.

[5] Francis W. Parker, Talks on Pedagogics. (Chicago:
Kellopp, 1894), p. 93.

[6]Guy T. Buswell and William H. Wheeler. The Silent Reading
Hour. (Chicago: Wheeler Publishing Co., 1923), p. 21.

> Silent reading is more than noiseless reading.
> Silent reading is not mere non-vocal reading.
> It is the complex process of getting thought
> from the printed page and involves an entirely
> new pedagogy.[7]

Thus researchers have sought understanding of reading comprehension for

many years.

One of the early studies in this area was conducted by Huey.

He used two articles of high interest, but moderate difficulty. The indiv-

idual words from these articles were pasted on strips of cardboard and then

exposed to readers for four seconds, after which the reader reported his

associations with the word. Another facet of this experiment involved

use of successive words and phrases pasted on cardboard slips. The

subject again reported his associations after exposure to test materials.

The two exposures were separated in time in order to prevent one test from

interfering with the other. Huey concluded from this study that "meanings

seemed usually to be felt as belonging to the larger wholes, to the sen-

tences and other units. The words were mainly 'counters,' felt as having

a part in the total, but their function being mainly to help tide one over to

a place where a new meaning would be suggested or completed."[8]

Another early research study in comprehension was conducted

by Thorndike.[9] He approached comprehension as a thinking process. He

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[7]Edmund Burke Huey, The Psychology and Pedagogy of Reading.
(New York: The Macmillan Co., 1908), p. 359.

[8]Huey, op. cit., p. 158.

[9]E. L. Thorndike, "Reading as Reasoning: A Study of Mistakes
in Paragraph Reading." Journal of Educational Psychology, (8, 1917),
p. 323-32.

analyzed the errors made by elementary school children in answering

simple questions based on short paragraphs. The subjects were allowed

unlimited time and were allowed to refer to the paragraphs they had read.

In analyzing his results he compared the reading process to solving a

problem. He stressed the need for combining the diffused ideas into a

related whole. Through this research it was demonstrated that instruction

is required for getting meaning from the printed page. So, as early as

1917, Thorndike illustrated the complexity of reading comprehension.

Factors Related to Reading Comprehension

A multiplicity of factors is involved in reading comprehension;

this complexity is vividly illustrated in a review of reading research.

Maw[10] related comprehension with curiosity. Jan-Tausch[11] related com-

prehension with concrete thinking when he found that concentration on

concrete levels of thinking impeded comprehension. Piekarz[12] research

supported the findings of Jan-Tausch as she found that the poor reader

concentrated on literal meanings when reading. Fay, [13]

[10]Ethel Maw, "Curiosity and Comprehension." The Reading
Teacher, (16, January, 1962), p. 27.

[11]James Jan-Tausch, "Concrete Thinking as a Factor in Read-
ing Comprehension," Challenge and Experiment in Reading. International
Reading Association Proceedings, (New York: Scholastic Magazine, 1962),
pp. 160-164.

[12]Josephine A. Piekarz, "Getting Meaning from Reading,"
Elementary School Journal, (March, 1965), pp. 303-309.

[13]Leo Fay, "The Relationship Between Specific Reading Skills
and Selected Areas of Sixth Grade Achievement." Journal of Educational
Research. 43, (1950), p. 541.

Shores,[14] and Artley[15] studied the specific comprehension factors related to each content area, and found that good readers used a greater variety of approaches than poor readers. The good readers were better able to choose an appropriate purpose for reading. Hilliard[16] studied the factors related to comprehension and found that intelligence, vocabulary, organization, and rate were most closely related to comprehension.

Theory of Reading Comprehension

Several authors and researchers have attempted to sort out the multitude of factors, those that appear to be validly related to reading comprehension. Some of this study has taken the form of analysis of the process, while other scholars have developed models of the process. Both the models and the research studies reveal a common factor, that reading comprehension is not a unitary skill.

Smith[17] suggested four models or categories of skills for comprehension which she considered broad enough to include all the thinking skills usually suggested by psychologists. She believes that these

[14]Harlan J. Shores, "Skills Related to the Ability to Read History and Science." Journal of Educational Research. 36, (1943), pp. 181-188.

[15]Steryl Artley, "General and Specific Factors in Reading Comprehension." Journal of Experimental Education. 45, (1948), pp. 181-190.

[16]G. H. Hilliard. Probable Types of Differences Underlying Some Scores in Comprehension Tests, State University of Iowa Studies in Education, Vol. 2 no. 6 (Iowa City, Iowa: State University of Iowa, College of Education, 1924).

[17]Nila Banton Smith, op. cit., p. 249-259.

categories could be applied to any selection in any book. The categories developed by Smith are: (1) literal comprehension, which is the skill of getting direct literal meaning from the selection read, (2) interpretation, which covers all of the thinking skills (this category is concerned with meanings not stated in the content) (3) critical reading includes the previous two levels and goes beyond these to evaluate, pass judgment on the value and quality of the passage, (4) creative reading that grows out of the previous three categories. The reader goes beyond the author's ideas and develops his own.

The categories developed by Smith are reminiscent of the reading model developed by Gray.[18] His model is based on perception, and then moves to the aspects of comprehension, reaction and assimilation. The comprehension aspect of this model includes literal meaning which is concerned with what the passages say, "securing expanded grasp of the meaning,"[19] and "understanding ideas read."[20] The third aspect of Gray's model is reaction which includes reacting to ideas acquired from reading. The fourth aspect of his model is fusion which involves seeing possible relationships between ideas read and previous experiences.

A somewhat different view of comprehension was proposed by Cleland[21] in his construct of reading comprehension, which explains the

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[18]William S. Gray, "The Major Aspects of Reading," in Sequential Development of Reading Abilities. Edited by Helen M. Robinson. (Chicago: University of Chicago Press, 1960), pp. 8-28.

[19]Gray, op. cit., p. 13.

[20]Gray, op. cit., p. 16.

[21]Donald L. Cleland, "A Construct of Comprehension," in Reading and Inquiry. International Reading Association Proceedings, (Newark, Delaware: Scholastic Magazines, 10, 1965), p. 249-259.

intellectual processes used by the reader. This model included:
(1) perception which referred to seeing the reading content; (2) appercep-
tion, which referred to relating the new ideas read with the reader's
experience; (3) abstraction which referred to the process of selecting
specific meanings from generic meanings; (4) appraisal referred to the
process of evaluating the meanings selected according to accepted stan-
dards; (5) ideation referred to using the ideas derived from the previous
steps in thinking. Thinking in this situation involved inductive reasoning,
deductive reasoning, critical thinking, problem solving, and creative
thinking; (6) application is the functional use of ideas made by the reader.
Several of the aspects expressed in this construct are found in the models
proposed by Smith and Gray. Each of these models is based on percep-
tion, each involved seeing relationships, each involved reacting to what
had been read, and each involved using what had been read.

A very different model of reading is proposed by Holmes and
Singer in the Substrata-Factor Theory.[22] Singer describes reading as,
"an audio-visual processing skill of symbolic reasoning."[23] This theory
relates ideas about the function of the brain to the reading process. A
statistical procedure is used to specify the relationship of the results to
certain tests of outcome measurement in reading. By calculating the

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[22]Jack A. Holmes, "Basic Assumptions Underlying the Sub-
strata-Factor Theory." Reading Research Quarterly, (1, Fall, 1965),
pp. 4-28.

[23]Robert Singer, Substrata-Factor Reorganization Accompanying
Development of the Speed and Power of Reading at the Elementary School
Level. Cooperative Research Project, No. 2100 (Washington, D.C.:
Office of Education, U.S. Department of HEW, 1965), p. 1.

relationships among test results the researchers attempt to determine the "subfactors" in reading. The term "power" of reading in this model involves ability to grasp main ideas and details, interpretation, and drawing inferences. Thus, there are some similarities between the Substrata Theory, and previously described models.

Barrett[24] developed a taxonomy of reading comprehension skills, which is divided into five major skill categories: (1) literal comprehension; (2) reorganization; (3) appreciation. Within each of these major areas, Barrett has specified types of tasks involved. This taxonomy provides an interesting perspective for examining reading materials and teaching techniques.

Richards views meaning from a very different stance than many reading specialists. He discusses meaning from a more philosophical point of view and discusses meaning with particular reference to poetry. He points out that in literature, or any other mode of communication, there are several kinds of meaning which we must "juggle" for understanding. Richards believes that human utterances can be regarded from four points of view: (1) sense, refers to the purpose that the speaker has when he speaks; (2) feeling, refers to emotions or personal attitudes toward the subject; (3) tone, refers to the fact that the speaker ordinarily has an attitude toward his subject which is reflected in his choice and

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[24]Thomas C. Barrett, "Taxonomy of Cognitive and Affective Dimensions of Reading Comprehension," in Innovation and Change in Reading Instruction. Sixty Seventy ! ..rbook of the National Society for the Study of Education. (Chicago: University of Chicago Press, 1968), p. 19.

arrangement of words; (4) <u>intention,</u> refers to the conscious or uncon-scious aims of the speaker.[25] Thus, Richards' model is concerned with, "what he says (sense), his attitude to what he is talking about (feeling), and his attitude to his listener (tone), speakers (intention) his aim."[26]

Each of the models, constructs, or taxonomies presented has provided a tool for examining the complicated task of reading compre-hension, but each has weaknesses which may or may not be open to remedy. For example, each of the models presented has been limited be-cause reading is an interrelated complex of skills which is almost impos-sible to convey in a model. Robinson says:

> Thus the mature reader can move flexibly from
> meaning to language, emphasizing one aspect
> or another of reading because he has thoroughly
> mastered each of the processes required to read
> in this manner. The skills in recognizing words
> and the attitude of constant search for meaning
> are automatic.[27]

Hidden influences on reading comprehension further complicate this already complex task. For example, experiential background of the reader is a significant aspect of the act of comprehension. As Deighton says, "meaning comes from experience."[28]

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[25]I. A. Richards, <u>Practical Criticism.</u> (A Study of Literary Judg-ment) (New York: Harcourt, Brace and Co., 1939), p. 180.

[26]<u>Ibid.</u>

[27]Helen M. Robinson, "Unity of the Reading Act," in <u>Sequen-tial Development of Reading Abilities.</u> Supplementary ed. Monographs ed. by Helen M. Robinson, (Chicago: University of Chicago Press, 1950), p. 238.

[28]Lee C. Deighton, "Experience and Vocabulary Development" in <u>Reading and Inquiry.</u> Proceedings of the International Reading Associa-tion, (Newark, Delaware: International Reading Association, 1956), p. 56.

The dimensions of comprehension which have been presented are difficult to summarize because they are so diverse. Howe/er, it seems that many factors influence comprehension. There are also many points of view regarding comprehension, but there is agreement that it is a complex process composed of many factors.

The Nature of Comprehension

Berry[29] outlined the skills used by a good reader in her study of the comprehension errors made by college freshmen. She found that the good reader must read for general outline, facts, and content. He must be able to relate subordinate details to main ideas, select key sentences, visualize, note new or difficult terms and concepts, and grasp major issues and their implications. The good reader must understand individual words and infer the meanings of unknown words from context. He must be able to understand the writer's point of view and interpret the writer's intent. The good reader should follow a train of thought, ignore the ir- relevant, be able to answer questions, isolate essential parts of an idea, note restrictive modifications, relate essential ideas or elements to each other, and relate parts of a reading selection to the whole. Berry con- cluded on the basis of experimental results that native intelligence and cultural background did not have to be considered in teaching students to improve comprehension skills.

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[29]Betty Trier Berry, "Improving Freshman Reading Habits." English Journal. 30, (1931), pp. 824-828.

Davis[30] conducted a factor-analytic study of comprehension,
utilizing tests constructed to measure the skills considered o: most impor-
tance by reading authorities. He surveyed the literature to determine the
comprehension skills considered of greatest importance. A large list of
skills developed from which he selected nine testable skills for further
study; the nine skills selected were: recalling word meanings; drawing
inferences about the meaning of a word from content; following the struc-
ture of a passage; formulating the main thought of a passage; finding
answers to questions answered explicitly or merely in paraphrase in the
content; weaving together ideas in the content; drawing inferences from
the content; identifying the writer's techniques, literary devices, tone,
and mood; and recognizing a writer's purpose, intent, and point of view.
The skills are summarized in Table 1. The factors selected were used in
an analysis of the reading comprehension tests of college freshmen.
Results of this analysis show that the nine factors selected represent non-
chance variance. The nine factors are summarized in Table 1.

Another study conducted by Davis[31] was designed to investigate
eight of the nine skills previously isolated in his 1941 study. The sub-
jects for this study were high school students who were administered
multiple choice tests developed around the eight skills being investigated.
This study indicates that "comprehension among mature readers is not a

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[30]F. B. Davis, "Fundamental Factors of Comprehension in
Reading." Psychometrika, 9 (1944), pp. 185-197

[31]F. B. Davis, "Reasoning in Comprehension in Reading."
Reading Research Quarterly. (Summer, 1968), pp. 501-545.

TABLE I

DAVIS STUDY FACTORS

	Skill	No. of Items	Mean	Variance
1.	Recalling word meanings	60	23.77	134.70
2.	Drawing inferences about the meaning of a word from content	20	13.70	10.56
3.	Following the structure of a passage	9	4.20	3.01
4.	Formulating the main thought of a passage	5	2.97	1.22
5.	Finding answers to questions answered explicitly or merely in paraphrase in the content	22	18.10	6.05
6.	Weaving together ideas in the content	42	25.67	32.17
7.	Drawing inferences from the content	43	28.46	33.75
8.	Identifying a writer's techniques, literary devices, tone, and mood	10	6.75	3.46
9.	Recognizing a writer's purpose, intent and point of view	27	15.19	16.55

unitary mental skill or operation."[32] On the basis of this research Davis suggests that systematic and carefully planned learning exercises that are appropriate in difficulty for each pupil should be provided throughout the secondary school grades.[33]

Hunt[34] investigated the different skills comprising reading comprehension through a differential item analysis of 204 multiple-choice items used by Davis in the Cooperative Reading Comprehension Tests. The items were classified with respect to six skills by twenty-one judges. The subjects in his study were 370 high school students. He found that comprehension in reading involves word knowledge and paragraph comprehension. In his 1968 study Davis found that word knowledge and reasoning in reading account for virtually all of the variance of comprehension, so the two studies are in agreement.

Harris[35] examined the skills related to comprehension of literature with young adult males. He used objective items to measure seven comprehension skills. Following is a list of the skills studied:

1. Recognizing synonyms for unusual words or groups
   of words.

2. Recognizing equivalents of words or groups of words
   as used in context.

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[32]Davis, op. cit., p. 543.

[33]Ibid.

[34]L. C. Hunt Jr. "Can We Measure Specific Factors Associated with Reading Comprehension?" Journal of Educational Research, 51, (1957), pp. 161-171.

[35]C. W. Harris, "Measurement of Comprehension in Literature." The School Review. 56, (1948), pp. 280-289; 332-342.

3. Recognizing pronoun antecedents, subjects, and
predicates, in loosely organized sentences, in-
verted sentences, or sentences with unusual order.

4. Recognizing main ideas, subordinate ideas, sum-
maries of ideas, implied ideas.

5. Recognizing summaries of characteristics, actions,
motives, and attitudes described in the passage.

6. Recognizing the relationship between technique and
meaning.

7. Recognizing the writer's attitude toward subject
and characters etc. His mood, emotion, intents,
and purpose.

On the basis of his investigation of these skills, Harris suggests that
different types of written material should be used to test different skills.

Artley[36] studied the relationship between reading comprehen-
sion and comprehension in social studies. This investigation involved
measurement of reading comprehension and social studies skills with five
standardized tests. The results of the five tests were correlated to
determine relationships between reading comprehension and comprehension
of social studies material. The subjects in this investigation were
eleventh grade students. He found a substantial relationship between
general reading ability and ability to do certain types of thinking in the
social studies. However, the correlation of .79 indicates that there is

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[36]Artley, op. cit., p. 187.

substantial specificity for some of the types of thinking related to social studies.

Maney[37] and Sochor[38] utilized item analysis in their studies of science and social studies materials. They constructed and evaluated intermediate grade reading tests in these content areas. Fifth grade students were subjects in both studies. Maney and Sochor concluded there was a positive, but low, relationship between literal reading ability and critical thinking. This leads to the conclusion that there is a difference in the types of thinking required by different reading situations."
Betts[39] combined the studies of Artley, Sochor, and Maney into a fourth study called, "Research in Reading as a Thinking Process." He concluded among other things that "Reading is a complex of mental abilities embracing with other elements clusters of specific skills, abilities, and attitudes."[40]

Schoeller[41] critically examined the scientific studies on reading comprehension and drew conclusions regarding the nature of reading

[37]Lionel Wain Mane, _Literal and Critical Reading in Science._ Doctor's Dissertation. (Philadelphia 22, Pennsylvania: Temple University, 1952.)

[38]E. Elona Sochor, _Literal and Critical Reading in Social Studies,_ Doctor's Dissertation, (Philadelphia 22, Pennsylvania: Temple University, 1952).

[39]Emmett Albert Betts, _op. cit._, pp. 1-13.

[40]Betts, _op. cit._, p. 12.

[41]Arthur W. Schoeller, _A Critical Survey of the Scientific Studies of Reading Comprehension._ Unpublished doctoral dissertation. (Pittsburgh: University of Pittsburgh, 1950), pp. 192-203.

comprehension. His analysis consisted of five dimensions of reading

comprehension: (1) nature of comprehension; (2) psychology of reading

comprehension; (3) relationship between concepts and comprehension;

(4) factors in the reader which determine extent of comprehension and;

(5) factors not related to comprehension. He noted that two large com-

ponents and three small components of comprehension have been iden-

tified by factorial analysis; reasoning in reading or a verbal factor, which

is largely dependent of intelligence, has shown to be the largest com-

ponent of comprehension. The second largest component has been iden-

tified as word knowledge, or a word factor. Three small components were

identified as (1) seeing relationships which may be related to reasoning,

but which seems to be a specific ability; (2) drawing inferences from facts

presented; (3) organizing specific factors.

Sex differences in reading comprehension were the objective

of research in at least two studies. Stroud and Lindquist[42] studied 50,000

pupils in grades three through eight. They used data compiled from ad-

ministration of the Iowa Every-Pupil Basic Skills Test. They found that

girls were consistently and significantly superior to boys in reading com-

prehension. The greatest difference between boys and girls was found

in grades two through six. Alden et al.[43] stu   000 children in grades

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[42]J. B. Stroud and E. F. Lindquist,   .fferences in Achieve-
ment in the Elementary and Secondary School,   l of Educational
Psychology. 33, (1943), pp. 657-667.

[43]Clara Alden, Helen B. Sullivan,   ld Durrell, "The
Frequency of Special Reading Disabilities,"   ., 42, (1942),
pp. 32-36.

two through six using the Durrell Sullivan Reading Capacity Test. They
found that the number of boys who were one or more years retarded in
reading comprehension was double that of girls in each of the first five
grades.

The studies summarized here confirm the complex nature of
reading comprehension. Research indicates that a number of skills ap-
pear to be involved in comprehension. Research also confirms that in-
struction in reading comprehension is useful in improving comprehension.
Research suggests that boys have more difficulty comprehending than
girls.

Improvement of Comprehension

Carroll[44] studied comprehension in relationship to reading
directions. His purpose was to determine whether reading of directions
could be improved by specific practice. Although this study was con-
ducted in 1926, concern for reading directions continues to be a common
problem today, both in school and out of school. Direction reading re-
quires very exact reading which is apparently difficult for many readers.
Carroll used drill with seventh and eighth grade students and found that
drill in reading directions produced marked improvement in this type of
reading. "In the three experiments, the four groups that were given prac-
tice made an average gain of 60.24 percent in the function trained."[45]

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[44]Robert P. Carroll, An Experimental Study of Comprehension
in Reading. (New York: Bureau of Publications Teachers College, Colum-
bia University, 1926), p. 51.

[45]Carroll, op. cit., p. 61.

Improving comprehension ability was the goal of Alderman also.
He studied "Improving Comprehension Ability in Silent Reading."[46] His
subjects were students in grade four through eight. The experimental
group was drilled with exercises on organization, retention, and vocabu-
lary while the control group continued in the usual fashion. The students
using the drills made more progress in every area; however, organization
drill was of the most value, retention next,and vocabulary of least value.
Children who scored low in comprehension ability profited more from this
type of drill than those in the upper quartile.

Purposing is widely recognized as a key to reading compre-
hension.[47] Many authors suggest the use of specific purposes for im-
provement of comprehension. Smith[48] studied the various purposes listed
by different researchers and developed a list of twelve for further study.
She then developed exercises and tests to use with high school students.
The outcomes of this research indicated that the purposes in her list were
related to reading comprehension; further, her study reestablished that
these purposes could be developed through instruction. The purposes es-
tablished through her study were as follows:

1. general impression
2. main ideas
3. details
4. sequence

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[46]G. H. Alderman, "Improving Comprehension in Reading."
Journal of Educational Research. 13, (1926), pp. 11-21.

[47]Kerfoot, op. cit., p. 255.

[48]Helen K. Smith. Instruction of High School Students in
Reading for Different Purposes. (Chicago: The University of Chicago,
1966), p. 13.

5. comparison
6. cause and effect
7. sensory imagery
8. characterization
9. anticipate outcomes
10. mood
11. fact or opinion
12. directions

"Relationship Between Interest and Reading Comprehension,"
was the study conducted by Bernstein.[49] The purpose of this study was
to determine whether a student's comprehension was better when he was
reading an article that was interesting than when reading a selection
which was uninteresting. The researcher was also interested in deter-
mining what ways interest is related to reading comprehension. Two
stories were written for this study, one was written in an interesting
manner; while the second story was written in a dull manner. The out-
come of this study was that students who are reading a selection which
is more interesting than another do read with superior comprehension.
Higher interest was also reflected in a fuller more adequate written res-
ponse. "Higher interest also seemed to evoke more creative responses;
responses that showed the pupils were reading actively and thinking about
the materials as they went along."[50]

In a recent investigation of reading comprehension, Bormuth[51]
utilized the cloze procedure to determine student ability to comprehend

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[49]Margery R. Bernstein, "Relationship Between Interest and
Reading Comprehension," Journal of Educational Research. (December,
1955), p. 288.

[50]Ibid.

[51]Bormuth, op. cit., "The Effectiveness of Current Procedures
for Teaching Reading Comprehension." p. 5.

at different levels: primary, intermediate, junior high, and senior high school levels. He found that in the fourth grade, "a great many of the children were unable to exhibit comprehension of even the simplest structures by which language signals information."[52] Bormuth found that there was no clear concept of comprehension skills reflected in either materials used to teach comprehension or in textbooks used to instruct teachers regarding comprehension.

Wolf, King, and Huck[53] studied teaching of critical reading which is an aspect of comprehension. Their purpose was to investigate whether critical reading skills could be taught to children in grades one through six while maintaining basic reading skills. They also studied the relationship between certain factors and critical reading ability; and the kinds of teacher verbal behavior which elicited critical responses from children. The results of this study show that the experimental groups which received instruction in critical reading received significantly higher total critical reading scores than the control groups. At no grade level was there a significant difference between the scores of the two groups on general reading ability. General reading ability and intelligence were found to be related to critical reading ability. The teachers' interpreting, analyzing, and evaluating questions produced more critical responses from children than other types of questions.

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[52]Ibid.

[53]Willavene Wolf, Martha L. King, and Charlotte S. Huck. "Teaching Critical Reading to Elementary School Children." Reading Research Quarterly. (Summer, 1968).

A modern attitude toward reading was reflected in a recent study entitled, "Cybernetic Control of Memory While Reading Connected Discourse."[54] This study presented a model of reading that suggested that the reader enters a "minimal set of stimuli into memory, which govern subsequent feedback control, and that Ss allow passage organization to act as a surrogate storage for easily retrieved verbal units."[55] The college students read materials which were organized by concept name and materials organized by attribute. The group which read the materials organized by concept name retained more attributes than the group which read the same materials organized by attribute.

The data presented here regarding reading comprehension indicated that comprehension is a multi-faceted ability. The studies cited show that comprehension is influenced by factors such as sex, intelligence, interest, and organization of content. Certain of the studies show that comprehension skill can be improved through instruction.

Certain words express the great thoughts of mankind; these words are nouns, adjectives, and verbs. These are the substantive words of language. However, the full meaning of these substantive words depends upon another class of words, the thought connectors, that indicate relation; these "thought-connectors are prepositions, conjunctions, relative pronouns, and adverbs."[56] Fernald suggests that, "the value

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[54] Lawrence T. Frase, "Cybernetic Control of Memory While Reading Connected Discourse." _Journal of Educational Psychology._ 60, (1968), pp. 49-55.

[55] Frase, _op. cit._, p. 49.

[56] James C. Fernald, _Connectives of English Speech._ (New York: Funk and Wagnalls Company, 1904), p. 1.

of these connectors may be clearly manifested by simply striking them out of any well-known paragraph and showing the barrenness and confusion that result."[57] For example, the connectives have been eliminated from the "Pledge of Allegiance to the Flag of the United States of America" in the following passage.

> I pledge allegiance _____ the flag _____ the
>
> United States _____ America, _____ _____ the
>
> Republic _____ _____ it stands, one nation _____
>
> God, indivisible, _____ liberty _____ justice
>
> _____ all.

Conjunctions as a class of words were recognized by Aristotle. He investigated the parts of speech, distinguishing nouns, verbs, and a third conglomerate class called conjunctions.[58] Coleridge is credited with saying "that good writers could be known by their use of connectives--but, yet, though, because, since, and the like. Closely reasoned prose,"he said, "had a linked strain throughout, but the sentences of inferior authors like marbles in a bag, touched without adhering."[59]

Conjunctions were unnecessary in Old English because it was an inflected language,[60] and like all inflected languages, the relation

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[57]Ibid.

[58]John T. Waterman, _Perspectives in Linguistics_. (Chicago: The University of Chicago Press, 1963), p. 7.

[59]R. A. Philbrick. _Understanding English._ (New York: The Macmillan Company, 1944),p. 16.

[60]Albert C. Baugh, _A History of the English Language._ (New York: Appleton-Century-Crofts, Inc. 1957), p. 63.

of words in a sentence was indicated largely by means of inflections.
During the Middle English Period (1100-1500) inflections in English disap-
peared in many cases. This factor caused English to become an analytic
language which makes use of fixed order of words and connectives to
indicate relationships. Thus conjunctions became more important in the
English Language.

Acquisition of Conjunctions

Apparently children acquire the use of conjunctions somewhat
later than the use of substantive words such as nouns and verbs. Ervin
and Miller[61] point out that "function words are almost completely lacking
in the early stages of development." Children use noun phrases at early
levels of acquiring grammar; these phrases are pivotal in nature (a noun
and a pivot word are used) for example, a phrase like "go ball" might be
used by a twenty month old child.[62] The child's grammar at this stage
consists of words in pivot classes and words in open classes. Children
apparently use these original classes as a tool for differentiating the
various classes of words. The open class develops into conjunctions,

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[61]W. Miller and Ervin S. "The Development of Grammar in
Child Language," in The Acquisition of Language. U. Bellugi and R.
Brown (eds.) Monographs of Society in Research in Child Development.
1964, 29, 1, 9-34.

[62]R. Brown and Fraser C. "The Acquisition of Syntax," in
Verbal Behavior and Learning. C. N. Cofer and B. S. Musgrace (eds.)
(New York: McGraw-Hill, 1963.

prepositions, adverbs, and determiners. Velten[63] found that his daughter developed the use of prepositions, demonstratives, auxiliaries, articles, conjunctions, possessives, and personal pronouns, the past tense suffix, the plural suffix, and the possessive suffix between 27 and 30 months of age.

Young[64] studied the frequency of parts of speech used by children ages 30 to 48 months from average and below average socioeconomic status. Pronouns and verbs were most common, each comprising about 26 percent of all words used. Nouns were next in frequency, 17 percent and were followed by adverbs, 10 percent; adjectives, 7 percent; prepositions, 4 percent; infinitives and interjections, 3 percent each; and conjunctions 1.5 percent.

McCarthy[65] and Smith[66] found that the largest changes in frequency of use of all parts of speech except adverbs occurred between one and a half years and three years. The percentages of pronouns, adjectives, verbs, and prepositions, and conjunctions increased during the period while the percentage of nouns and interjections decreased.

Stability in the distribution of parts of speech used by children seemed to increase after three years of age. McCarthy[67] studied the

[63]H. V. Velten, "The Growth of Phonemic and Lexical Patterns in Infant Language." Language. X (1943), pp. 190-204.

[64]F. M. Young "An Analysis of Certain Variables in Developmental Study of Language." Genetic Psychology Monographs. 23, (1941), pp. 3-141.

[65]Dorothea McCarthy, op. cit., p. 60.

[66]M. E. Smith, op. cit., p. 60.

[67]Ibid.

different parts of speech used by children after three years of age with the following results: the percentage of nouns stabilized near 20 percent, verbs around 25 percent, adjectives around 15 percent, adverbs around 7 percent, pronouns around 20 percent, conjunctions around 4 percent, prepositions around 7 percent, interjections around 1 percent, and miscellaneous less than 1 percent. Templin[68] studied the percentages of various parts of speech used by subjects three to eight years of age with the following results: nouns 38 percent, verbs 26 percent, adjectives 12 percent, adverbs 7 percent, pronouns 6 percent, conjunctions 1.5 percent, prepositions 3 percent, interjections 3 percent, and miscellaneous 2 percent.

Thus, it appears that children acquire conjunctions somewhat later than other parts of speech. Also, young children appear to use fewer conjunctions in their oral language than other parts of speech.

Psychological Nature of Conjunctions

Chomsky[69] suggests that both the form and meaning of a sentence are determined by syntactic structures that are related to the sentence through interpretation. This factor lends the property of abstractness to grammatical structure. A language, is defined by Chomsky as a set of semantic-phonetic percepts, of sound meaning correlations; the correlations being determined by the intervening syntactic structure.

[68]Mildred C. Templin, op. cit., p. 102.

[69]Noam Chomsky, op. cit., p. 48.

Syntactic structure consists of two factors. It consists of surface struc-

ture which is directly related to the phonetic form; and deep structure

that underlies the semantic interpretation. Deep structure is an abstract

representation which is not usually directly related to the phonetic signal.

Terwilliger[70] described function words (conjunctions are a

member of this class of words) as words which are defined by the roles

which they play in sentences, and by the roles which they play in relat-

ing words to each other. He believes that a function word is a precise

entity in a way in which form class words are not. The meaning of a form

class word can be deduced from the contexts in which it is used, while

function words cannot be deduced from context. The meanings or func-

tions of function words must be learned precisely and individually. Ter-

williger suggests that the specific environmental situations and precise

grammatical uses of function words must be learned by rote memorization.

He believes that no deviation is permitted in the usage of function words;

although, deviation is permitted in the usage of form class words. The

specialized nature of function words causes them to be harder to learn to

enter the child's vocabulary later and to be used more incorrectly than

the form class words.

Research indicates that children use structure words before they

are able to relate meaning to them. Piaget[71] found that children used

connectives in their own language before they understood the corresponding

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[70]Robert F. Terwilliger. _Meaning and Mind._ (New York: Oxford
University Press, 1968), pp. 43-44.

[71]Piaget, _op. cit._, p. 60.

meaning. Vygotsky[72] found evidence that children learn spoken language through imitation, and that they attach meanings to the structures they are using at a later time. This evidence corroborated Piaget's conclusions.

The development of language as an instrument of learning and thinking is the goal of Bereiter and Engleman[73] in their preschool program. They point out that they do not care so much that child learn nouns such as ball, but they make sure that their students can understand such words as not and or, which they consider to be some of the most powerful logical tools in the language. Hurlock[74] points out that to perceive meanings the child must be able to see relationships. She believes that the child's ability to see cause and effect relationships develops gradually, and children under seven or eight years of age have inaccurate and incomplete concepts of causality.

Definitions of Conjunctions

Conjunctions are members of a class of words that have grammatical meaning. These words are empty words, words which merely indicate the grammatical relations of words; they stand for nothing ever found in the practical world. "A word having only grammatical meaning is an empty word, i.e., a word empty of practical meaning. The

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[72]Vygotsky, op. cit., p. 50.

[73]Bereiter and Engleman, op. cit., p. 25.

[74]Hurlock, op. cit., p. 187.

systematic use of empty words is the second main device of English

grammatical structure--surpassed in importance only by fixed word

order."[75]

Conjunctions are also called structure . Roberts[76] points

out three ways in which structure words are different from the form

classes. Structure groups are small groups of words, while form groups

number in the thousands. A second difference is that structure words

have no features of form to mark them in sentences. Words in form

classes may be marked by features like plural endings cr tense endings,

or suffixes, and prefixes. A third difference is that structure words

come into play mostly when these basic patterns are expanded.

Numerous definitions for conjunctions can be found. Fernald[77]

refers to them as, "the simplest of connectives, merely conjoining or

joining words, phrases, or sentences." Fries[78] defines conjunction as

"a word that joins together the sentence or parts of a sentence." He

also states that conjunctions are also words whose chief meanings lie

in the grammatical functions they indicate."[79] Long[80] defines

[75]Harold Whitehall, The Structural Essentials of Written English.
(Bloomington, Indiana: Indiana University, 1951, second edition), p. 29.

[76]Paul Roberts, Patterns of English, (New York: Harcourt, Brace,
and World, 1956), p. 293.

[77]Fernald, op. cit., p. 195.

[78]Charles Carpenter Fries, American English Grammar. New
York: Funk and Wagnalls Company, 1944), p. 195.

[79]Ibid.

[80]Ralph B. Long, The Sentence and Its Parts. (Chicago: The
University of Chicago Press, 1961), p. 484.

conjunctions as a syntactically miscellaneous category composed of:
(1) the basic coordinators, and, but, or, and not, and the precoordin-
ators, both, not, either and neither; (2) clause marker adverbs such as
when, how, and if; (3) prepositions such as after and because; and (4)
the clause marker that.

Roberts[81] defines conjunctions as "words that pattern like and."
He also points out that conjunctions sometimes connect whole patterns.
Hill[82] believes that conjunctions can only be fully understood in terms
of complex sentences. He states that "conjunctions are one of the
classes of invariant words--that is, they take no suffixes and prebases
and no postbases. They do, however, admit compounding." Strang[83]
defines conjunctions as joining words, and names the two types of con-
junctions as coordinators, and subordinators. Whitehall defines con-
junctions in the following quotation:

> conjunctions are connective empty words used to
> link words or word groups in non-base relationships
> ......the only class used to establish direct con-
> nection between subjective-predicate word groups.[84]

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[81]Roberts, op. cit., p. 295.

[82]Archibald A. Hill, Introduction to Linguistic Structures. (New
York: Harcourt, Brace, and Company, 1958), p. 398.

[83]Barbara M. Strang. Modern English Structure. (New York:
St. Martins Press, 1965), p. 173.

[84]F..rold Whitehall, Structural Essentials of English. (New
York: Harcourt, Brace, and Company, 1956), p. 90.

Flesch says "that connectives tell the reader exactly in what way the ideas are tied together."[85]

Summary

In examining the numerous definitions of conjunctions one finds that conjunctions are words that join words, phrases, and sentences. Conjunctions derive their meaning from the functions they signal in the sentence; in fact they are termed function words by some authors, connectives by others, and empty words by others.

Conjunctions and Reading

The significance of conjunctions for reading comprehension is made apparent in this quotation by Whitehall:

> A word having only grammatical meaning is an empty word . . . The systematic use of empty words, the third main device of English grammatical structure, is surpassed only in importance by fixed word order. Essentially, empty words provide a grammatical framework within which the meanings of the full words operate.[86]

Other authors have drawn attention to the role of connectives in reading. Thorndike[87] found that although pupils understood the meaning of words in paragraphs they continued to make errors in answering questions regarding the paragraph. After studying the nature of these errors he

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[85] Rudolf Flesch, _A New Guide to Better Writing_, (New York: Popular Library, 1963), p. 56.

[86] Whitehall, _op. cit._, p. 90.

[87] E. L. Thorndike, "The Understanding of Sentences," _Elementary School Journal_, 18, (1917), pp. 98-114.

concluded that pupils were not able to use relational words and phrases,
such as but and on the contrary, to relate ideas with each other. When
the reader did not understand these relationships he assigned over-
potent meaning to certain words and under-potent meaning to other
words.

Huey[88] studied the ideas and images aroused by various words,
among the words he studied were connective and relational words. He
found that these "little words," as they were labeled by his subjects,
suggested almost no imagery and seldom aroused any ideas directly.
The few associations suggested by these words were verbal, and usually
were phrases of which they were ordinarily a part. However, these words
did give evidence of setting the readers' thoughts in some characteristic
direction of expectancy.

Weaver's[89] experiments with cloze techniques indicated that
subjects made a greater volume of responses for words determined by
structural pattern or syntactic constraint. He also found that structural
meaning was conveyed better by silent reading than by listening, while
lexical meaning was conveyed equally well by either medium. He fur-
ther suggested that structural elements were probably stored in a fashion
to function as cues for the mass of stored substantive or semantic words.

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[88]Huey, op. cit., p. 154.

[89]W. W. Weaver, "Theoretical Aspects of the Cloze Procedure,"
in The Philosophical and Sociological Bases of Reading. ed. Eric L.
Thurston and Lawrence E. Hafner. (Fourteenth Yearbook of the National
Reading Conference). (Milwaukee: National Reading Conference, Inc.
1965), pp. 115-132.

He hypothesized that, "stored high frequency structural words are matched to the language imput in decoding and used again in generating or encoding the responses as drawn from the large storage bank of such terms and tend to be determined by the structural constraints."[90] This interpretation is supported by the evidence that function words offered in recall of such materials as a story tend to be similar to the individual's own spontaneous production while the lexical elements agreed very closely with those in the original materials, conforming to the semantic constraints in the content.

Squire[91] suggests that research is needed to develop a better understanding of connectives. He believes that it is not enough to use a word such as "although" due to the subtleties involved in the relationship signaled by the word. He says, "How then can we help fourth graders to manipulate the 'although' relationship? When do children begin to use and understand 'if . . . then' and similar relationships? The possibilities for important research in this field seem endless."[92]

Robertson[93] studied pupils' understanding of connectives in fourth, fifth, and sixth grade levels. She designed instruments for measuring understanding of connectives to use in the study. A significant relationship between a child's understanding of connectives in reading

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[90]Weaver, op. cit., p. 125.

[91]James R. Squire, "Multilevel Research in English," in Needed Research in the Teaching of English, edited by Erwin R. Steinberg (Carnegie Institute of Technology, 1962), p. 25.

[92]Ibid.

[93]Robertson, op. cit., p. 414.

and the factors of sex, mental age, listening, reading and written language, were found in this study. She also found that there was a significant increase from grade to grade in pupil understanding of connectives and the types of errors he made when reading.

Card and McDavid[94] investigated "the frequency of structure words in the writing of children and adults, "through comparison and contrast of vocabulary lists. The vocabulary lists represented both children's writing and adult writing. They found that children used certain conjunctions more frequently, while the able adult writers used others. For example, the adult might choose because, as, since, or and, while children favor the one word, because.[95]

The above findings are similar to those of Loban[96] who conducted a longitudinal study of elementary school children. He studied both the oral and written language of elementary school children. He found that the high group used subordination to a greater extent than the average and low groups when measured with an index of subordination. He noted the use of subordinating connectors increased with chronological age, mental ability, and socioeconomic status.

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[94] Card and McDavid, op. cit., pp. 878-882.

[95] Ibid.

[96] Walter D. Loban, The Language of Elementary School Children. (Champaign, Illinois: National Council of Teachers of English, 1963), p. 86.

Harrell[97] studied the oral and written language of children from
eight to twelve years of age through analysis of samples of oral and
written language. Davis[98] studied the linguistic development of child-
ren from five to ten years through analysis of their oral language. The
outcomes of both these studies indicated that children from eight to
twelve used subordination in their written and oral language in from ten
to thirty percent of all the sentences they used. They also found that
the amount of subordination increased with age.

Conjunctions are empty, structure words that enter the grammar
of children somewhat later than full or substantive words. Conjunctions
derive their meaning largely from the functions they fulfill within and
between sentences. This function is largely one of indicating relation-
ships. A limited amount of research is available regarding conjunctions;
however, the available research indicates the possibility of a relation-
ship between reading achievement and understanding of conjunctions.

Syntax and Comprehension

Recognizing words is not reading. Reading is understanding
what the sentences say. Ives states, "that a method of teaching reading

[97]L. E. Harrell Jr. _A Comparison of the Development of Oral
and Written Language in School-age Children,_" Monograph of the Society
for Research in Child Development, 22 (1957), pp. 63-71.

[98]Edith A. Davis, _The Development of Linguistic Skills in
Twins, Singletons with Siblings, and only Children from Age Five to
Ten Years._ (Minneapolis: University of Minnesota Press, 1937.)

which stops with the recognition of words is relying on the pupils to assemble the matrix from the words and to understand the contribution it makes to the meanings and relationships of the words. It assumes that the pupils have acquired the ability to supply the proper grammatical components of meaning as they have learned to speak the language.[99] Considering the importance which is placed on comprehension in reading it is amazing that we have overlooked the fact that reading is primarily a linguistic process, and, because this is true, that phonology, morphology and syntax are significant aspects of the process. Since reading is concerned with meaning, the reader must recognize how meaning is expressed in the English language because children are taught to read English not to read in the abstract.

Understanding meaning in reading is really dealing with the problems of sharing meaning through language. Fries says that, "all the meanings stored in language are communicated by the sets of language skills that constitute a language code."[100] Bormuth states that, "comprehension is not just a set of mental processes which can be defined independent of language, and instruction must be systematically designed to assure that children learn those systems by which language signals meaning."[101] Goodman believes that "reading is a psycho-

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[99]Ives, op. cit., p. 128.

[100]Charles Carpenter Fries, Linguistics and Reading. (New York: Holt, Rinehart, and Winston, Inc., 1963), p. 132.

[101]John R. Bormuth, "An Operational Definition of Comprehension Instruction," in Psycholinguistics and the Teaching of Reading. ed. by Kenneth S. Goodman and James T. Fleming, (Newark, Delaware: The International Reading Association, 1968), p. 48.

linguistic process. It involves the interaction of language and thought as language is decoded and meaning reconstructed."[102] He also states that, "to understand the process of reading we must understand how the linguistic code words as a carrier of meaning and we must understand how the reader uses language in comprehending; the study of language and language use is at the heart of the study of reading."[103]

Syntax is especially significant in English because meaning is not conveyed one word at a time, additively. In synthetic language such as Latin the meaning of a word is indicated by the inflection attached to the end of the word which indicates gender, number, and case. The order of words in a synthetic language is not so significant as it is in an analytic language like English. In English, the particular meaning of the opening words in a sentence depends upon the context of the entire sentence; thus, it is only at the end of the sentence that the reader can fix the meanings of the individual words. The formal distinction between runs as a noun and runs as a verb is syntactic. "How many runs did he have today?" "Linda runs very fast." "There are two runs in my hose." The situation becomes even more complicated when a word remains a verb, but the syntax of the sentence gives the verb various forms such as the verb grew in the following sentences. "The boy grew fast." "The boy grew tall." and "The boy grew roses." The meaning of grew in the first

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[102]Kenneth S. Goodman, "Words and Morphemes in Reading," in Psycholinguistics and the Teaching of Reading, ed. Kenneth S. Goodman and James T. Fleming, (Newark, Delaware: The International Reading Association, 1968), p. 25.

[103]Goodman, op. cit., p. 25.

sentence is intransitive, in the second linking; and in the third trans-

itive. These examples make evident the importance of syntax in Eng-

lish. Hill states that "significant sentence element order is probably

responsible for the often repeated statement that English is a language

primarily characterized by word order."[104]

Research Regarding Syntax and Comprehension

Gray and Leary found some indication that the correlation be-

tween comprehension difficulty and grammatical complexity changes with

the reading ability of the subjects in their study, What Makes a Book

Readable.[105] Flesch[106] found correlations of .66 and .47 between

comprehension difficulty of passages and the mean number of syllables

and words in sentences. Thus it appears that grammatical complexity

rather than sentence length is a significant factor in comprehension.

Bormuth[107] has conducted several studies that are relevant to

this problem. In one study he correlated measures of frequency, mean

word depth, and length of independent clauses and whether the correla-

tions changed as the subjects increased in reading achievement. The

[104]Archbald A. Hill, op. cit., p. 261.

[105]William S. Gray, and Bernice A. Leary, What Makes a Book
Readable. (Chicago: The University of Chicago Press, 1935), p. 70.

[106]Rudolf Flesch, "A New Readability Yardstick." Journal of
Analytic Psychology, (1948), pp. 239-253.

[107]Bormuth, op. cit., "New Measures of Grammatical Com-
plexity."

interaction between the reading achievement of the subjects and levels

on the grammatical complexity measure was significant. All three

measures of grammatical complexity correlated significantly with com-

prehension difficulty. In another study Bormuth[108] found that large

proportions of children in school are unable to interpret the basic syn-

tactic structures by which language signals information.

Ruddell[109] investigated the relationship between a program that

emphasized language structure to achievement in first grade reading. A

program was designed by the investigator to stress language structure

as related to meaning. This program was used to supplement the program

in regular use. It was found in this study that the program possessing

consistent correspondences (phoneme-grapheme correspondences) and

emphasizing language structure as related to meaning produced signifi-

cantly higher (a) paragraph meaning comprehension, and (b) sentence

meaning comprehension achievement, than the program possessing only

consistent correspondences.[110] Ruddell concluded that paragraph mean-

ing comprehension, sentence meaning comprehension, and vocabulary

achievement of first grade subjects were a function of the control which

subjects exhibited over designated aspects of morphological language

[108]John R. Bormuth, op. cit.,"The Effectiveness of Current Procedures for Teaching Reading Comprehension."

[109]Robert B. Ruddell, "The Relation of Grapheme-Phoneme Correspondences and of Language Structure to Achievement in First Grade Reading." in The Psycholinguistic Nature of the Reading Process. (Detroit: Wayne State University Press, 1968), p. 268.

[110]Ruddell, op. cit., p. 268.

system, and syntactical language system at the beginning of grade one.

Nuruss[111] studied the relationship of syntactic structure and comprehension difficulty through oral reading errors made by second grade children in sentences of varied levels of syntactic complexity. The results of her study indicated that there was a relationship between the number of oral reading errors a child made and the syntactic complexity of the sentence being read. She found that many of the types of errors children made appeared to indicate comprehension of the sentence, although the child did not read the exact words in the passage.

The relationship between reading comprehension and material written with frequent and infrequent oral language patterns of children was investigated by Tatham.[112] She used passages written with frequent oral language patterns and passages written with infrequent oral language patterns with second and fourth grade students. She found that second and fourth graders comprehend material written with frequent oral language patterns better than material written with infrequent oral language patterns. She also found that knowledge of sentence patterns was significantly related to reading comprehension. On the basis of this study she concluded that knowledge of structure of language is an important factor in reading comprehension.

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[111]Jean Nuruss, "The Relationship of Syntactic Structure and Comprehension Difficulty." Reading Teacher. (March, 1969), p. 16.

[112]Susan M. Tatham, Reading Comprehension of Materials Written with Select Oral Language Patterns: A Study of Grade Two and Four. Research for the doctoral thesis at the University of Wisconsin-Madison, 1968.

Sauer[113] studied fourth grade children's knowledge of gram-
matical structure and reading comprehension. She used sentences writ-
ten in four basic sentence patterns for this study. The subjects read
the sentences and answered questions based on the sentences. The
outcomes of this study indicated that children's comprehension of the
four basic sentence patterns differed significantly. She also found that
knowledge of sentence patterns was significantly related to reading
comprehension. On the basis of this study she concluded that know-
ledge of structure of language is an important factor in reading compre-
hension.

The importance of syntax in relation to reading comprehension
has been developed in the literature presented in this section. Gram-
matical complexity appears to be related to difficulty level of reading
content. Instruction for children in grammatical structure improves read-
ing comprehension. However, more specific information is needed re-
garding the types of syntactical structure that are more difficult to com-
prehend. Information is also needed regarding instructional materials
and instructional techniques.

Summary

The literature and research cited in the comprehension section
of this paper suggest the need for further clarification and research of
the factors involved in comprehension. The literature cited in the area

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[113]Lois E. Sauer, "Fourth Grade Children's Knowledge of
Grammatical Structure and its Relation to Reading Comprehension." A
doctoral dissertation, University of Wisconsin, 1968.

of conjunctions indicates that conjunctions are empty words whose sig-
nificance lies in the relationships they signal within sentences and
between sentences. The limited amount of research available related tc
conjunctions supports the theory that a relationship exists between
conjunctions and reading comprehension. The literature and research
cited in the area of syntax and comprehension further support the theor-
ized relationship between complexity of syntactic structure and reading
comprehension. The next chapter will describe the sample, standard-
ized instruments, construction of instruments to measure comprehension
of conjunctions, and collection of data for this study. The current study
was designed to further explore the relationship between understanding
conjunctions and reading comprehension.

CHAPTER III

DESIGN AND METHODOLOGY

This study involved the study of the relationships of a number of variables. Two standardized instruments and two instruments which were designed by the principal investigator, were given to fourth grade pupils. The standardized instruments included a test of mental ability and a test of reading comprehension. The tests specifically designed for this study were a multiple choice test and a cloze test. The data collected was analyzed using computer programs, a partial correlation, analyses of variance, a binomial test, a chi square, item analysis, and Kuder-Richardson formulas 20 and 21.

Instrumentation

Selection of Standardized Tests

The two standardized instruments used in this study were the Pintner Intermediate Test, and the Stanford Achievement Test in reading. The Pintner Intermediate Test:[1] Form A (verbal ability series) was selected to provide data regarding general mental ability. It is organized in a series of eight batteries which include: vocabulary, logical selection,

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[1] Rudolph Pintner, Pintner General Ability Tests. (Verbal Series) (New York: Harcourt, Brace and World, Inc., 1942).

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number sequence, best answer, classification, opposites, analogies, and arithmetic reasoning. This test is designed to provide for measurement of a variety of skills or abilities which constitute different aspects of mental ability. A mental age score and intelligence quotient are yielded by this instrument. Data from this instrument permits a partial correlation required to control the effect of intelligence in this study.

Selection of the Pintner Intermediate Test was made for two reasons. This test is an extension of the mental ability test used in the U.S.O.E. Cooperative Primary Reading Studies:[2] therefore, it contributes to cumulative research. The use of this study permits comparison of data from a number of previous studies. The second reason for the use of this test was the quality of the test. The Pintner Intermediate Test samples a broad range of the effects of the child's total environment. The author of the test defined intelligence as "that which enables a child to do school work, yet is not dependent upon the school experience itself."[3] Reliability for the test was obtained by the split-half and interform methods for the various batteries. Reliability is .90. Standardization is based on 100,000 tests administered in widely separated parts of the country. This test is reviewed for the Buros Yearbook of Tests and Measurements by Stanley S. Marzolf, who states that it is "one of the best available for the schools."[4] He also notes the attempt by the

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[2]Dykstra, op. cit., p. 70.

[3]Marzolf, Stanley S., The Third Mental Measurements Yearbook. ed. Oscar K. Buros, (New Brunswick: Rutgers University Press, 1949), p. 255.

[4]Buros, op. cit., p. 256.

authors of this test to make tests comparable at all grade levels.

The Stanford Achievement Test[5] (Intermediate I, Form W) was selected for collection of reading comprehension data. This instrument consists of a word meaning test and a paragraph meaning test. Data from the paragraph meaning test will be used for correlation in this study.

The Stanford Achievement Test was selected for this study for the sam reasons that the Pintner Intermediate Test was selected. First, because it represents an extension of the reading achievement test used in the U.S. Office of Education Cooperative Primary Reading Studies. Use of this test permits comparison of the data collected in this study with the data collected in the U.S. Office of Education Cooperative Primary Reading Studies; thus contributing to cumulative research. The second reason for selection of this instrument is that it is a valid, reliable instrument. The Stanford Reading Test is based on "content of the typical elementary school curriculum;"[6] and this was the type of curriculum that the subjects participating in this study had encountered. Reliability for the test was obtained by the split-half reliability method. The split-half scores ranged from .82 to .92 with half of them over .90. Norms for this instrument were based on 350,000 pupils selected from all areas of the country, all types of school systems, and all socio-

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[5]Truman L. Kelley, Richard Madden, Eric F. Gardner, Herbert C. Rudman, Stanford Achievement Test, (Reading Test Series) New York: Harcourt, Brace and World, Inc. 1964).

[6]Helen Robinson, The Sixth Mental Measurements Yearbook. ed. Oscar R. Buros, (Highland Park, New Jersey: The Gryphon Press, 1965), p. 656.

economic levels. In reviewing this instrument for the Buros Yearbook,
Helen Robinson states, "that it is among the best survey tests of read-
ing achievement for elementary grades."[7]

Therefore, both the Pintner Intermediate Test and the Stanford
Reading Tests were found to be valid and reliable for the objectives of
this study. These tests, provide valid and reliable data; furthermore,
use of these instruments also permits comparison of data from this study
with data from other studies.

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Development of Comprehension of
Conjunction Tests

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Selection of Conjunctions

This section discusses the selection and definition of conjunc-
tions to be investigated in this study. Development of the multiple choice
tests and the cloze test are also presented in this section.

The conjunctions to be investigated in this study were selected
through the consideration of five factors:

    (1) vocabulary lists
    (2) frequency of usage lists
    (3) findings of previous research
    (4) lists of conjunctions developed by authorities
          in the field
    (5) definitions of conjunctions

Basic vocabulary lists and conjunctions list were consulted as the basis
for selection of conjunctions to study. Classification of conjunctions
and function words (some authors include conjunctions in this class of

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[7]Buros, op. cit., p. 256.

words) developed by authorities in English grammar as well as published

research were consulted to determine a group of conjunctions basic to

the English language.

Fries[8] studied English grammar through examining some 3,000

letters written by subjects in his study. He found that seven function

words accounted for 84.9 percent of the instances of usage of function

words. Five more, or a total of twelve words in all, account for 92.2

percent of the instances of usage of function words. These words are

listed in Table 2 in the Appendix.

Robertson[9] selected 17 connectives for study, on the following

factors: (1) frequency of occurrence in the basal reader sentence anal-

ysis; (2) the multiplicity of meanings of the connectives; (3) the homo-

graphs of the connectors; (4) the findings of previously published re-

search; and (5) the classes of connectives. The connective s selected

by Robertson are found in Table 2 in the Appendix.

The lists of conjunctions developed by experts in the fields of

grammar and linguistics were also consulted. The lists in this category

were developed by Fernald,[10] Long,[11] Strang,[12] Whitehall,[13] Mellon ,[14]

[8]Fries, op. cit., p. 207.

[9]Robertson, op. cit., p. 394.

[10]Fernald, op. cit., pp. 195-275.

[11]Long, op. cit., p. 207.

[12]Strang, op. cit., p. 173.

[13]Whitehall, op.cit., p. 60.

[14]John C. Mellon, Complex and Conjunctive Transformations. (Culver, Indiana: Culver Military Academy, 1964), p. 180.

and Schuster[15] are presented in Table 2 of the Appendix. After comparing the lists of conjunctions derived from previous research and experts in the field of grammar and linguistics, a list was compiled of the words which appeared on the majority of these lists for further consideration.

The list described above was then used for comparison with frequency lists. Frequency lists provide information regarding the frequency and range of occurrence for specific words. Among the various frequency lists available, one of the most valuable lists was A General Service List of English Words[16] by West. This list provides the frequency of usage in various functions for words. This is significant because it is important to know how frequently they are used in some other role. Other frequency lists were consulted also for information as to frequency and range of occurrence. "A Basic Vocabulary of Elementary School Children, "[17] by Rinsland lists the raw cumulative frequency of words through the fourth grade. Rinsland has listed the 14,571 words occurring three or more times in any one grade level. The Dale List[18] of approximately three thousand familiar words represents words that are

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[15] Schuster, op. cit., p. 341.

[16] Michael West, A General Service List of English Words. (New York: Longmans, Green and Company, 1953).

[17] Henry D. Rinsland, Basic Vocabulary of Elementary School Children. (New York: The Macmillan Company, 1945).

[18] Edgar Dale, and Jeanne S. Chall, A Formula for Predicting Readability, (Columbus, Ohio: Bureau of Educational Research, The Ohio State University, 1948), pp. 19-28.

known by at least 80 percent of the children in grade four.[19] "A Mini-
mum Reading-Spelling Vocabulary for Remedial Work," was developed by
Spache.[20] The words in this list are placed in levels of reading dif-
ficulty, and following each word is a spelling grade placement. The
Dolch List[21] is a list of 220 basic sight words. "These 200 words make
up from 50 percent to 75 percent of all ordinary reading matter. They
should be recognized on sight by all school children."[22] The vocabul-
ary frequency lists are compiled in Table 3 of the Appendix.

The conjunctions appearing with the highest frequency on the
majority of lists were selected for investigation in this study. The
following conjunctions were those selected: and, but, yet, nor, or, than,
for, so, if, though, while, how, that, when, where, which, because,
either, neither, now, since. This list included the frequently used
conjunctions, but not so many as to make the study unmanageable.

The five factors cited were related to determine the conjunctions
that should be investigated in this study. The words either and neither
were not as high in frequency of occurrence as some other words; how-
ever, either and neither are defined as conjunctions and the majority of

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[19]Dale, op. cit., p. 18.

[20]George Spache, "A Minimum Reading-Spelling Vocabulary for
Remedial Work." Journal of Educational Research, (November, 1939),
pp. 161-173.

[21]E. W. Dolch, Methods in Reading. (Champaign, Illinois:
The Garrard Press, 1955), pp. 373-374.

[22]Dolch, op. cit., p. 373.

their occurrence is in the conjunctive function. A number of the other words appearing on the list, such as after, are defined as prepositions, and usually occur in the prepositional function. These words were excluded from the present study.

Definitions of Conjunctions

After the most frequently occurring conjunctions were selected from the data compiled in Table 3, the next step was the development of definitions for the selected conjunctions. The following dictionaries were consulted as the definitions were developed: The World Book Dictionary,[23] The American Heritage Dictionary,[24] and The Random House Dictionary of the English Language.[25] On the basis of the definitions derived from these sources and the functional use of conjunctions, working definitions of the conjunctions were developed for this study. The definitions developed as follows:

> and   And is used to connect words, phrases or
> clauses that have the same grammatical
> function in a construction. There are
> several definitions for and: (1) together,

[23]Clarence L. Barnhart, ed., The World Book Dictionary. (Chicago, Illinois: Field Enterprises Educational Corporation, 1963).

[24]William Morris, Editor, The American Heritage Dictionary of the English Language. (New York: American Heritage Publishing Co. Inc. and Houghton Mifflin Company, 1969).

[25]Jess Stein, Editor in Chief, The Random House Dictionary of the English Language. (The Unabridged edition), (New York: Random House Inc., 1967).

also, in addition; (2) added to; (3) as

a result. <u>And</u> signals a relationship of

addition.

<u>as</u>   <u>As</u> is used as a comparative term to

express equality. <u>As</u> signals a relation-

ship of comparison.

<u>because</u>   <u>Because</u> is used as a conjunction meaning

"since," or "for the reason that," <u>Because</u>

signals a relationship of qualification.

<u>but</u>   <u>But</u> has several definitions: (1) on the con-

trary; (2) however, yet; (3) except, save;

(4) with the (5)other than. <u>But</u> signals a

relationship of contrast.

<u>if</u>   When <u>if</u> is used as a conjunction it means

"in the event that"; 'or on the condition

that." <u>If</u> signals a   tionship of qualifica-

tion.

<u>for</u>   When <u>for</u> is used as a conjunction it is defined

as "because" or "since." <u>For</u> signals a

relationship of illation.

<u>how</u>   When <u>how</u> functions as a conjunction it is

defined as "the way in which." <u>How</u> signals

a relationship of incorporation.

<u>neither,</u>   <u>Neither</u> . <u>nor</u> means "not either" or "not in
<u>nor</u>
either case." <u>Neither</u> . <u>nor</u> signals a rela-

tionship of alternation.

now	When now is used as a conjunction it means "since" or "seeing that." Now signals a relationship of qualification.
or	When or functions as a conjunction it is used to connect words, phrases, or clauses representing alternatives. Or signals a relationship of alternation.
since	When since is used as a conjunction it is defined as "the time when," "because," or "in view of the fact." Since signals a relationship of qualification.
so	So is defined as "in order that" or "with the result that" when used as a conjunction. So signals a relationship of illation.
than	Than is used to mean in comparison with. Usually than is used to mean in comparison of unequal quantities. Than signals a relationship of alternation.
that	That is used to introduce a subordinate clause which expresses cause, reason, purpose or result. That signals a relationship of incorporation.
though	When though is used as a conjunction it is defined as, "although," "even if," "however," or "yet." Though signals a relationship of qualification.

where	When _where_ is used as a conjunction it is defined as "at what or which place"; "in a place which." _Where_ signals a relationship of qualification.
when	_When_ is defined as, "at the time which," or "though," when used as a conjunction. _When_ signals a relationship of qualification.
while	_While_ is defined as, "as long as," or "during the time that." _While_ signals a relationship of qualification.
yet	When _yet_ is used as a conjunction it is defined as "though," "still," or "nevertheless." _Yet_ signals a relationship of contrast.

After developing twenty-five multiple-choice items the principal investigator administered the items in a pilot study to nine fourth graders in a Columbus Puclic School. The teacher was asked to select three children in a high achievement range, three children in the average achievement range, and three children in the low achievement range. An introspective technique was used, whereby the subjects individually read the test items and told the investigator which answer they had chosen and why they had chosen those answers. After using this technique it was found that children did not understand the wording in certain items, so they were reworded and a Comprehension of Conjunctions Test of fifty items was developed.

A second pilot study was designed to validate this instrument. The pilot study involved administration of the instrument to sixty fourth grade students, who were members of intact classroom groups in an elementary school at Ashville, Ohio. The data collected from this study was analyzed using the Kuder-Richardson formula 21; and the outcome was a reliability coefficient of .88. An item analysis was performed on this data, which served as a basis for test revision. Two items were found to have a negative discrimination index; therefore, these items were eliminated from the test. The test was also extended from 50 items to 63 items in an effort to extend the reliability of the instrument. A copy of this revised instrument which was used in the final study is found in the Appendix.

Multiple Choice Test Construction

A multiple choice instrument was constructed on the basis of the list of conjunctions and the definitions developed. This instrument was designed to measure relationships commonly signaled by conjunctions. The instrument was constructed utilizing items constructed in the following manner. Each test item was a sentence including a conjunction for four alternative responses. One alternative stated the same relationship as the sentence; another alternative made sense, but the relationship was not the one stated in the sentence; a third alternative gave a relationship similar to the correct answer, but not the correct answer because the relationship was not the same one as that in the original sentence; the fourth alternative gave a relationship that is totally incorrect, and did not make sense. The subject responded to the items

TABLE 4

THE STRUCTURE OF AN INDIVIDUAL TEST ITEM

Answers given in one test item	Conjunction fits the Meaning of the Sentence	Answer makes sense
(a) correct answer	yes	yes
(b) incorrect answer	no	yes
(c) incorrect answer	no	no
(d) incorrect answer	no	may or may not

TABLE 5

RELIABILITY OF FINAL INSTRUMENT

Subjects	Items	Reliability
60	63	.88

by choosing the one word or phrase which stated the relationship in-
dicated by the conjunction underlined in the sentence.

Cloze Test Construction

The cloze procedure was selected for measuring comprehension
and readability of selections involving a high number of conjunctions,
half as many conjunctions, and no conjunctions. This test was used as
a second measure of comprehension of conjunctions, and is entitled The
Cloze Comprehension of Conjunctions Test. It is based on the assump-
tion that cloze tests are influenced not only by the reading material
itself, but by the reader's characteristics which influence the difficulty
of the materials for that reader.[26]

The cloze procedure has been used and validated for measure-
ment of comprehension and readability.[27] It is a procedure that is con-
structed by replacing every fifth word in a reading passage with an
underlined blank of standard length; the first and last sentence in each
passage is complete (no words deleted). When taking the test, the sub-
ject writes in each blank the word he thinks was deleted.

Bormuth[28] used a cloze test in conducting a study of 150 fourth,
fifth, and sixth grade pupils. On the basis of this study, he says,

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[26]Ruth Gallant, "Use of Cloze Tests as a Measure of Readabil-
ity in the Primary Grades," in Reading and Inquiry. J. A. Figurel (ed),
(Newark, Delaware: The International Reading Association, 1965) 10,
286-287.

[27]Gallant, op. cit., p. 286.

[28]J. R. Bormuth, op. cit., "Comparisons Among Cloze Test
Scoring Methods," pp. 286-291.

"It appears, at least under the conditions of the present study that cloze tests made by deleting every fifth word measure skills closely related or identical to those measured by conventional multiple-choice reading comprehension tests."[29] Jenkinson,[30] Ruddell,[31] and Bormuth[32] found correlations between standardized tests of reading comprehension ability and cloze tests from .70 to .85. Gallant[33] reports a study of the cloze test used with primary grade students. In this study Gallant found the reliability of the cloze test by split-half reliability coefficients for odd-even items, and corrected by application of the Spearman-Brown formula. The reliability coefficients ranged from .90 to .97 and were significant at the .01 level of confidence. The findings of this study indicate that the cloze tests were both valid and reliable measures of reading comprehension for primary grade pupils.

The passages used in the Cloze Comprehension of Conjunctions Test developed for this study were developed in this way: (a) one passage

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[29]John R. Bormuth, "Factor Validity of Cloze Tests as Measures of Reading Comprehension Ability." Reading Research Quarterly. (Spring, 1969), p. 358-365.

[30]M. E. Jenkinson, Selected Processes and Difficulties in Reading Comprehension. Unpublished doctoral dissertation, University of Chicago, 1957.

[31]R. B. Ruddell, An Investigation of the Effects of the Similarity of Oral and Written Patterns of Language Structure on Reading Comprehension. Unpublished doctoral dissertation, Indiana University, 1963.

[32]Bormuth, op. cit., p. 286.

[33]Gallant, op. cit., p. 287.

with many conjunctions, there were thirty three conjunctions in this passage; (b) a passage with half as many conjunctions, there were fifteen conjunctions in this passage; (c) a passage with no conjunctions was developed. A binomial test was used to test the significance of difference between the three passages. The number of conjunctions in the three levels was determined by differences in number of conjunctions significant at the .001 level. The difference between the passage with a high number of conjunctions, and the passage with half as many conjunctions was significant with a probability of .0082. The difference between the passage with half as many conjunctions and the passage with no conjunctions was significant with a probability of .0013. The difference between the passage with a high number of conjunctions and the passage with no conjunctions was significant with a probability of .00003. This data is summarized in Table 6.

TABLE 6

SIGNIFICANCE OF DIFFERENCE - CLOZE TEST PASSAGES

Passage	No. of Conjunctions	Z Score	Probability
High conjunctions	33	2.45	.0082
Half as many conjunctions	15	3.06	.0013
No conjunctions	0	5.87	.00003

The readability of the passages in the Cloze Comprehension of

Conjunctions Test was measured through the use of the Lorge Readability

Formula.[34] The Lorge Index for the passages are as follows: (a) 2.4548;

(b) 2.4839; (c) 2.2960. The Lorge Readability formula measures voca-

bulary load, sentence length, and number of prepositional phrases in

order to control reading difficulty. Readability was controlled at this

level so that difficulty of content would not be a central problem to the

subjects; thus the difficulty encountered in reading these passages was

due to the difference in number of conjunctions. The passages were

developed around the topics of baseball, spring, and kite flying since

children at this age are interested in sports, and informational books.[35,36]

POPULATION AND SAMPLE

In selecting a grade level for study, fourth grade was chosen

because previous studies indicate that children at this level begin to

make wider use of conjunctions. Loban[37] found that children in fourth

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[34]Irving Lorge, "Predicting Reading Difficulty of Selections for Children." Elementary English Review. (October, 1939),pp. 229-233.

[35]May Hill Arbuthnot, "Old Values in New Books," in Ivory Apes and Peacocke. (Champaign, Illinois: National Council of Teachers of English, 1968), p. 19.

[36]Charlotte S. Huck and Doris Young Kuhn, Children's Litera-ture in the Elementary School. (New York: Holt, Rinehart and Winston, 1961), p. 34.

[37]Walter D. Loban, op. cit., pp. 82-87.

schools in this category. Thus a total of fourteen elementary schools were included in this study.
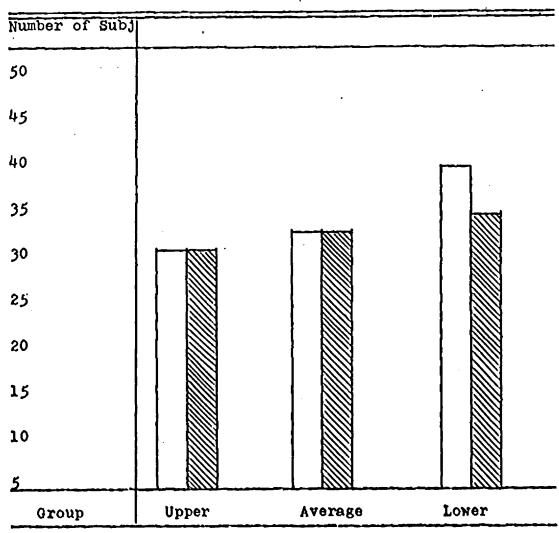
The school system provided a listing of all fourth grade students. The names of subjects for a stratified random sample were drawn from this list using a table of random numbers. The original population of this study included thirty children in the upper level, thirty-one children at the middle level and thirty-nine children at the lower level (Table 7). A larger number of subjects were included at the lower level because children attending these schools are often transient, thus creating difficulty when attempting to administer four tests to each subject over a three week period. The larger number of subjects at the lower level allowed for attrition without permitting the number of subjects in this classification to fall below thirty. Complete data for this study is available for ninety-five subjects. Total data were collected for all children in the upper and middle levels and for thirty-five of the thirty-nine subjects in the lower level; therefore, total attrition was four subjects in the lower socioeconomic level.

DATA COLLECTION

Each subject participating in the study spent approximately 125 minutes in testing time. The Pintner Test required 45 minutes, The Stanford required 40 minutes, the Comprehension of Conjunctions Test required 30 minutes, and the Cloze Comprehension of Conjunctions Test required 40 minutes. Each subject was allowed enough time to complete the Comprehension of Conjunctions Test and The Cloze Comprehension

TABLE 7   73

SUBJECTS

grade show considerable improvement in control of words per maze when compared with kindergarten through grade three pupils. Another study[38] determined that productive control of syntax was striking at grade five when compared with grade three, but the study did not include children in the fourth grade. Hunt[39] studied children's writing at the fourth grade level, and found that children use in writing an increasing amount of subordination as they progress through school. He found that fourth graders combined sentences by coordinating four or five times as often as twelfth graders in the same number of words. Usually sentence coordination is accomplished through using the word and at this level.

Mansfield, Ohio was chosen as the site for this study. It is a medium-sized industrial city and has a representative population including upper-middle class, middle-class, and lower-class students. In order to select a stratified random sample, it was necessary to classify the schools within the school system as to socioeconomic levels. The classification of schools into socioeconomic levels was accomplished with the assistance of Elementary Principals, Superintendent of Schools, and the Director of Elementary Education, who met to determine one school classified as the upper level, and three classified as average. The schools designated by the government as recipients of Title One ESEA assistance were classified as low socioeconomic level; there were eight

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[38]Ray C. O'Donnell, William J. Griffin, Raymond C. Norris, Syntax of Kindergarten and Elementary School Children: A Transformational Analysis. (Champaign, Illinois: National Council of Teachers of English, 1967), p. 99.

[39]Kellogg W. Hunt, Grammatical Structures Written at Three Grade Levels. (Champaign, Illinois: National Council of Teachers of English, 1965), p. 35.

of Conjunctions Test as these were not timed instruments. These in-
struments are not timed because the objective in using them is to deter-
mine reading comprehension power. The standardized instruments were
carefully timed in accordance with the directions for administration.

The tests were administered in the elementary schools partic-
ipating in the study by four graduate students majoring in education.
Each test administrator was provided with a detailed set of instructions
for each instrument. After thorough study of the instruments and in-
structions, the test administrators met with the principal investigator
for further instruction as to the tests, timing, location, and order of
administration. In addition to individual study on the part of test admin-
istrators, approximately one and one-half hours were spent in prepara-
tion for test administration as a group.

The tests were administered in the following manner. The first
day, one half of the subjects received the Stanford Test, and the other
half of the subjects received the Pintner Test. The second day this pro-
cedure was reversed. The third day of testing, half of the subjects
received the Comprehension of Conjunctions Test and the other half The
Cloze Comprehension of Conjunctions Test. The fourth day of testing
this procedure was reversed. A fifth day of testing was required for test-
ing students who had missed tests on previous testing days; at the end
of the fifth day of testing all tests had been administered to all students
included in the study except the four students who had moved from the
city. Thus, the four instruments were administered in a three week
period to ninety-five subjects.

The standardized testing instruments were scored by hand using scoring mats provided by the publishing company. The Cloze Comprehension of Conjunctions was scored by the established procedure of marking wrong any word that did not agree exactly with the original passage.[40] The key for scoring the Cloze Comprehension of Conjunctions Test was prepared by the principal investigator. The multiple choice test was scored by hand with a key prepared by the principal investigator. The tests were scored and the scoring rechecked by the personnel who administered the tests, assisted by two undergraduate students in education who were employed for this purpose.

SUMMARY

Two standardized tests were selected for measuring mental ability and reading comprehension achievement, on the basis of reliability and validity, as well as the contribution they would make in relating this research study to prior studies. Two instruments were designed by the principal investigator; these instruments were designed to secure data regarding comprehension of conjunctions, and readability of conjunctions. Lists of conjunctions, vocabulary lists, and definitions of conjunctions were consulted as a basis for test construction. The four instruments were administered to ninety-five fourth graders, who were selected on the basis of a stratified random sample. The data from the administration

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[40]Bormuth, op. cit., "Comparisons Among Cloze Test Scoring Methods."

of the four instruments was correlated to determine whether a relation-ship existed between reading comprehension, readability of content, and understanding of conjunctions.

The next chapter of this paper will present and analyze the data collected. The last chapter of the paper will present the conclusions based upon the outcomes of the study.

CHAPTER IV

COLLECTION AND ANALYSIS OF DATA

Written language is one of man's vehicles of communication,
he writes what he intends others or himself to read; however, if the
reader cannot understand his message communication is not complete.
The reader should be able to understand the literal meaning of the mes-
sage, the significance of the message, and relate it to other messages.
This investigation was designed as an effort to help improve under-
standing of this communication process.

The primary concern of this research was to investigate the
relationship between understanding conjunctions and reading compre-
hension. Knowledge regarding this relationship enables educators to
better understand comprehension, to better design reading materials,
and to better plan methodology for teaching reading. Educators will be
enabled to plan instruction which will meet the individual needs of
students through knowledge regarding the relationship of variables such
as sex, socioeconomic level, and intelligence to comprehension of
conjunctions.

This investigation had three problem areas. The first prob-
lem area was the relationship between understanding of conjunctions
and reading comprehension. The second problem area was the difficulty

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level of the individual conjunctions studied. The third problem area
was the relationship between the understanding of conjunctions and the
demographic variables of sex, socioeconomic level, and intelligence.
The design of this investigation called for measuring understanding of
conjunctions and reading comprehension, to do so required the develop-
ment of two tests for measuring comprehension of conjunctions. These
two tests, along with other standardized instruments, were administered
to the subjects.

This chapter of the study has a threefold purpose: (1) to des-
cribe the types of data collected; (2) to describe the analysis of the
data; and (3) to report the results of the study.

Description of Data Collected

A multiple-choice test, The Comprehension of Conjunctions
Test, and a cloze test, The Cloze Comprehension of Conjunctions Test,
were developed by the principal investigator. These instruments, along
with the Stanford Reading Achievement Test and the Pintner General
Ability Test, were administered to a stratified random sample of ninety-
five fourth grade students in Mansfield, Ohio city schools. The tests
were administered by graduate students at The Ohio State University
who were trained to administer the tests. The data collected from each
subject included the following:

1. reading achievement in comprehension

2. comprehension of conjunctions (a multiple-choice
    test)

3. comprehension of conjunctions (cloze test)

4. socioeconomic status of school attended

5. sex

6. mental ability

In order to show clearly the results obtained, the data pertaining to each variable will be first considered separately. Then the individual relationships among the variables will be considered. The relationships among the various variables will be presented and discussed in a later section of this chapter. The basic data for all measures on all subjects are presented in Tables 9, 10, 11, 12.

The tests were scored and rechecked by four graduate students and two undergraduate students. The major portion of the statistical work related to this study was accomplished by use of the computer services at The Ohio State University. The computer program was planned with the assistance of a computer consultant in the College of Education. The personnel in the Statistics Laboratory at The Ohio State University provided guidance and verification of calculations. The item analysis and Kuder-Richardson formulas 20 and 21 were performed by the Center for Measurement and Evaluation at The Ohio State University.

<div align="center">

Test Reliability of Non-Standardized Tests
and Item Analysis
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Kuder-Richardson formulas 20 and 21 were computed to determine the reliability of the Comprehension of Conjunctions Test. The Kuder-Richardson formula 20[1] is an index of the internal consistency of

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[1]N. M. Downie and R. W. Heath, _Basic Statistical Methods._ (New York: Harper and Row, Publishers, 1959), p. 220.

the test and is a function of the number of items on the test, the varia-
bility of the scores, and the proportion passing and failing each item.
The formula is as follows: $r_{tt} = \frac{k}{k-1} \quad \frac{1-pq}{s^2}$. The reliability coef-
ficient yielded by the Kuder-Richardson formula 20 for the Comprehen-
sion of Conjunctions Test was .898.

Kuder-Richardson formula 21[2] is also an estimate of internal
consistency of reliability and is computed as the Kuder-Richardson
formula 20 except the mean score of the group is used instead of the
proportion passing and failing each item. The formula is as follows:

$$r_{tt} = \frac{n}{n-1} \cdot \frac{{}^2 t - n \, \bar{p}\,\bar{q}}{t^2} .$$

The reliability coefficient yielded by Kuder-Richardson formula 21 for
this instrument was .880. The reliability coefficients yielded by the
Kuder-Richardson formulas may be considered a minimum estimate of
the reliability of a test,[3] therefore, eliminating the danger of over-
estimating reliability. The reliability coefficients of .898 and .880 are
sufficiently high so it can reasonably be assumed that this is a reliable
test.[4]

Reliability coefficients were not computed for the Cloze
Comprehension of Conjunctions Test, as the reliability of this procedure

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[2]M. W. Richardson and G. F. Kudei, "The Calculation of
Test Reliability Coefficients Based upon the Method of Rational Equiv-
alence," Journal of Educational Psychology, XXX (1939), pp. 681-687.

[3]Walter B. Borg, Educational Research: An Introduction.
(New York: David McKay Company, Inc., 1936), p. 86.

[4]Downie, and Heath, op. cit., p. 220.

has been well established by previous research. Studies by Bormuth,[5] Jenkinson,[6] and Ruddell[7] provide correlations between standardized tests of reading comprehension ability and cloze tests of .70 to .85. Gallant[8] reports reliability coefficients which range from .90 to .97 and were significant at the .01 level of confidence.

An item analysis was computed to determine the discrimination index, relative difficulty, and total correct for each item. The relative difficulty for the Comprehension of Conjunctions Test ranged from .084 to .816. The discrimination index reflects the degree to which the item discriminates between the upper and lower achievement groups of subjects taking the test. The discrimination index for this test ranged from 4.4 to 81.5. The total correct is the percentage of subjects answering the item correctly. The total correct ranges from 8.4 to 91.6. The item analysis data for the Comprehension of Conjunctions Test is summarized in Table 8 which is found in the Appendix.

An item analysis was not performed on the Cloze Comprehension of Conjunctions Test, as it could not help improve or analyze the test.

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[5]Bormuth, op. cit., p. 365.

[6]Jenkinson, op. cit., p. 60.

[7]Ruddell, op. cit., p. 65.

[8]Gallant, op. cit., p. 287.

Comprehension of Conjunctions Test:

The results of the Comprehension of Conjunctions Test are
described in this section. This test is a multiple-choice instrument
developed by the principal investigator. There are sixty-three items on
the test. This is an untimed instrument as it is designed to measure
the power of comprehension.

The distribution of test scores made by the subjects on this
test is shown in Table 9 in the Appendix. Inspection of this table shows
that the test scores range from 57 to 14 which is a range of 43 points.
The mean for this test was 33.12 while the standard deviation was 11.68.
The wide range in scores and the large standard deviation of 11.68
indicate the broad variability of the subject's achievement on this test.

Cloze Comprehension of Conjunctions Test:

The Cloze Comprehension of Conjunctions Test results are
presented in this section. This test consisted of three passages writ-
ten by the principal investigator. One passage contained a high number
of conjunctions, the second passage contained an average number of
conjunctions, and the third passage contained no conjunctions.

The means for the three passages are as follows: passage
one, 36.98; passage two, 51.03; and passage three, 53.48. The
standard deviations for the three passages are as follows: passage one,
16.07; passage two, 16.02; and passage three, 20.47. The range of
scores is as follows: passage one, 64-0, a range of 64 points; passage
two, 85-0, a range of 85 points; and passage three, 83-0, a range of
83 points. The large standard deviations and the range of scores for

the three passages indicate the variability of achievement on this test.
The results of this test are reported in Table 10 in the Appendix.

Pintner Mental Ability Test:

The results of the Pintner Mental Ability Test are presented
in this section. This is a standardized multiple-choice instrument. Test
booklets and separate answer sheets were used in administering this
test. This test is a timed instrument; the subjects were allowed fifty
minutes to complete this test as specified by the directions accompany-
ing the test.

The distribution of intelligence quotients as determined by
this test are shown in Table 11 which is found in the Appendix. Inspec-
tion of this table indicates the mean for the test was 108.85, and the
standard deviation was 18.39. The scores range from 154 to 67 which
is a range of 87 points. Both the range of scores, and the large stan-
dard deviation indicate the broad variability of subjects on this measure.

Stanford Reading Achievement Test In Comprehension:

This section presents the results of the Stanford Reading
Achievement Test in Comprehension. This is a standardized multiple-
choice instrument. Test booklets and separate answer sheets were used
in administering this test. The subjects were allowed thirty minutes to
complete this instrument as specified by the directions accompanying
the test.

The distribution of the test scores made by subjects are
shown in Table 12 in the Appendix. Inspection of this table indicates

that the mean for the test was 45.29, and the standard deviation was 1.56. The range for this test was from 95 to 21 which is a range of 74 points. Although the range of scores for this test is broad, the standard deviation is small indicating that the subjects did not vary widely in achievement on this test.

Description of Data of Analysis

Seven measures were secured for the stratified random sample of fourth grade students who were subjects in this investigation. The measures include intelligence quotient, reading comprehension achievement, comprehension of conjunctions on a multiple-choice instrument, comprehension of conjunctions on three cloze passages, and socio-economic level. A variety of statistical procedures, summarized in Table 14, were used to show how these variables are related.

Item analysis was used to check the reliability and validity of the Comprehension of Conjunctions Test. Kuder-Richardson formulas 20 and 21 were also used to check the internal reliability of the test: see pages 144 and 145 for further information. (See Table 13 in Appendix.)

In order to explore hypothesis one of this study, a partial correlation was computed to assess the relationship between reading comprehension and comprehension of conjunctions while controlling the influence of intelligence. A partial correlation is used when the relationship between two variables is influenced by a third variable. With the partial correlation coefficient it is possible to control the effects of the third variable or to "partial them out." The formula for the

TABLE 14

STATISTICAL PROCEDURES

Statistical Procedures	Use of Procedures
Item Analysis	--check on the reliability and validity of the test --identification of most difficult test items --analysis of student achievement on test items
Kuder-Richardson Formula 20 Kuder-Richardson Formula 21	--check on the internal reliability of the test
Binomial Test	--analyze significance of difficulty of the test items
Chi Square	--analyze the significance of difficulty between test items
Correlation coefficient computation	--assessment of relationships between demographic variables and comprehension of conjunctions
Partial Correlation coefficient computation	--assessment of relationship between reading comprehension and comprehension of conjunctions while controlling the influence of intelligence.
One-way analysis of variance	--test significance of variations in student performance on the three cloze test passages

partial r is

$$r_{12.3} = \frac{r_{12} - (r_{13}\, r_{23})}{(1-r_{13}^2)\,(1-r_{23}^2)} \qquad .9$$

The partial r is a Pearson r and may be interpreted as such.

Hypothesis one was further explored through computation of three one-way analyses of variance. The analyses of variance were computed to test the significance of variations in student achievement on the three Cloze Comprehension of Conjunctions passages. An analysis of variance is a statistic used to test the difference between groups, in this case the difference tested was the achievement on three test passages. The formula for this statistic has three parts as follows: between group variance, $x^2 = X^2 - \frac{(\quad X)^2}{N}$; within group variance, $x^2 = X^2 - \frac{(\quad X)^2}{n}$. An F test is used to test the difference between the two variances, the formula is as follows:

$$F = \frac{\text{Mean square for "between" groups}}{\text{Mean square for "within" groups}} \qquad .10$$

Item analysis, binomial tests, and chi squares were computed in order to explore hypothesis two of this study. An item analysis was computed to determine the relative difficulty of test items on the Comprehension of Conjunctions Test; see pages   and   for further information. The binomial test was used to determine the significance of difficulty or ease of test items. The binomial distribution is the sampling distribution of the proportions we might observe in random samples

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[9] Downie and Heath, op. cit., p. 203.

[10] Downie and Heath, op. cit., p. 180.

drawn from a two-class population. In this sample the two class population was the class of those who completed the item correctly and the class of those who did not complete it correctly. The formula for this test is as follows:

$$Z = \frac{(x \pm 15) - NP}{NPQ} .[11]$$

A chi square formula was used to test the significance of difficulty of items on the Comprehension of Conjunctions Test. The formula for this statistic is as follows:

$$x^2 = \frac{(O-E)^2}{E} .[12]$$

The third hypothesis in this study was analyzed through the eta correlation coefficients computed by the computer program, BMDO3R. This statistic is used when one of the variables is continuous and the other is not continuous. The formula is as follows:

$$r_{kj} = \frac{D_{kj}}{D_{kk} \; D_{jj}} .[13]$$

ANALYSIS OF RESULTS

The Relationship Between Reading Comprehension and Comprehension of Conjunctions

This section presents an analysis of the data collected. The data is explored in relation to the three hypotheses of the study.

The significance of correlation between a subject's ability to identify the relationships that conjunctions signal and his reading

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[11] Sidney Siegel, *Nonparametric Statistics*. (New York: McGraw-Hill Book Company, Inc., 1956), p. 40.

[12] Downie and Heath, *op. cit.*, p. 164.

[13] Bernard Ostle, *Statistics in Research*, (The Iowa State College Press, 1954); chapter 8.

comprehension is explored in hypothesis one. The Comprehension of Conjunctions Test, The Cloze Comprehension of Conjunctions Test, The Stanford Achievement Test in comprehension, and The Pintner Test of Mental Ability were used to collect data for testing this hypothesis.

A partial correlation was computed using data from computer program BMDO3R and the partial correlation formula. The partial correlation was used to control the effects of intelligence or "to partial them out." This procedure is used when the relationship between two variables is influenced by a third variable.[14] Smith and Dechant point out that "mental age scores have been found to be closely related to reading readiness and reading achievement."[15] Schoeller also states that "reasoning in reading, or a verbal factor, which is largely dependent on intelligence, has been shown to be the largest component of comprehension."[16]

The partial correlation was computed for the relationship between reading comprehension achievement as measured by the Stanford Reading Achievement Test and understanding of conjunctions as measured by the Comprehension of Conjunctions Test. The partial correlation coefficient for the relationship between reading comprehension and

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[14]Downie and Heath, op. cit., p. 204.

[15]Henry P. Smith, and Emerald V. Dechant, Psychology in Teaching Reading. (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1961), p. 89.

[16]Arthur W. Schoeller, op. cit., p. 192.

comprehension of conjunctions was .2415 which is significant at the

.02 level. Therefore, hypothesis one was supported using the Compre-

hension of Conjunctions Test as a criterion. Table 15 presents these

results.

TABLE 15

PARTIAL CORRELATION
HYPOTHESIS ONE

Variable one	Variable two	Partial r	Significance
Stanford Reading Test	Comprehension of Conjunctions Test	.2415	.02

The Cloze Comprehension of Conjunctions Test was the second

technique for measuring comprehension of conjunctions. The test con-

sisted of three passages; one passage contained a large number of

conjunctions; the second passage contained half as many conjunctions;

and the third passage contained no conjunctions. Three one way

analyses of variance were computed to determine the relationship be-

tween the subject's achievement on the three types of cloze passage.

Data from computer program BMDO3R and the formula for analysis of

variance were used to compute these analyses of variance. The f score

for the analysis of variance between passages using half as many con-

junctions and the passage with no conjunctions was 35.93 which is

significant at the .001 level. The f score for the analysis of variance

between the passages using a high number of conjunctions and no

conjunctions was 61.83 which is significant at the .001 level. The f

score for the analysis of variance between passages using half as many
conjunctions and a high number of conjunctions was 8.75 which is
significant at the .001 level.

The f score for each analysis of variance was significant at the
.001 level; however, the scores for the passages with half as many
conjunctions and no conjunctions, as well as the one for a high number
of conjunctions and no conjunctions were much higher than the f score
for the average conjunctions and the high conjunctions passages. Hy-
pothesis one, then, is also supported by the results of this analysis,
using the Cloze Comprehension of Conjunctions Test as the criterion.
This data is summarized in Table 16.

TABLE 16

THE CLOZE COMPREHENSION OF CONJUNCTIONS TEST
HYPOTHESIS ONE

Passages	f score	Significance
High conjunctions and no conjunctions	61.83	.001
No conjunctions and half as many conjunctions	35.93	.001
High conjunctions and half as many conjunctions	8.75	.001

Hypothesis one must be accepted. There is a significant rela-
tionship between a subject's ability to identify the relationships that
conjunctions signal and his reading comprehension. The analysis of
results from the Comprehension of Conjunctions Test, and the Stanford
Reading Achievement Test, as well as the results of the Cloze

Comprehension of Conjunctions Test support the significance of this
relationship.

Analysis of the Difficulty of Various Conjunctions

The significance of difference in the difficulty of various types
of conjunctions is explored in hypothesis two. Data from the Compre-
hension of Conjunctions Test is used to investigate this hypothesis.

In order to arrive at the significance of difficulty for items on
the Comprehension of Conjunctions Test, the binomial test was used.
This test revealed a level of probability which indicated the significance
of difficulty or ease for the items (see Table 17). Through this analysis
it was found that twenty of the sixty-three items were significantly dif-
ficult for the subjects. The difficulty level ranged from .916 to .558,
and the significance of difficulty ranged from .0000001 to .1334885.
Eleven items were found to be significantly easy for the subjects. The
difficulty level for these items ranged from .084 to .316, and the sig-
nificance of difficulty ranged from .0000001 to .0003369.

The twenty difficult items represent ten different conjunctions.
The conjunctions which were significantly difficult for the subjects were,
when, so, but, or, where, while, how, that, than, and if. The eleven
significantly easy items represent four different conjunctions, but, and,
for, and as. The remaining thirty-two items on this test fall in a middle
range and are neither significantly easy or significantly difficult. This
table is organized by the rank order of difficulty of items. Rank one is
the most difficult, and rank sixty-three is the most easy item.

TABLE 17

HIERARCHY OF DIFFICULTY OF ITEMS COMPREHENSION
OF CONJUNCTIONS TEST

Rank	Item	Conjunction	Difficulty Level	Probability of** Difficulty
Difficult Items				
1.	46	when (while)	.916	.0000001
2.	54	so	.821	.0000001
3.	12	but (other than)	.800	.0000001
4.	49	when (though)	.768	.0000001
5.	23	or	.737	.0000003
6.	47	where	.737	.0000003
7.	61	so	.737	.0000003
8.	58	while	.726	.0000034
9.	48	how	.726	.0000034
10.	31	that	.684	.0001591
11.	22	or (synonymous)	.674	.0003399
12.	25	if (on condition that)	.642	.0034760
13.	62	where	.632	.0034760
14.	27	so	.621	.0035551
15.	42	but	.621	.0035551
16.	63	while	.589	.1334995
17.	30	how	.579	.1334995
18.	24	than	.568	.1334995
19.	19	but	.558	.1334995
20.	40	but	.558	.1334'95
Middle Range of Difficulty				
21.	59	when (at the time)	.547	ns***
22.	57	but (unless)	.537	ns
23.	51	how	.537	ns
24.	50	because	.526	ns
25.	18	and (again)	.526	ns
26.	15	but	.495	ns
27.	9	neither	.484	ns
28.	34	why	.484	ns
29.	52	neither	.474	ns
30.	56	but (other than)	.474	ns

*Items are ranked in descending order of difficulty—1. is most
difficult.
**P = .05
***ns = not significant

TABLE 17 (CONTINUED)

HIERARCHY OF DIFFICULTY OF ITEMS COMPREHENSION
OF CONJUNCTIONS TEST

Rank	Item	Conjunction	Difficulty Level	Probability of Difficulty
31.	14	or	.463	ns
32.	11	yet	.436	ns
33.	25	than	.432	ns
34.	28	though	.432	ns
35.	43	it (whether)	.432	ns
36.	53	either	.432	ns
37.	33	where	.421	ns
38.	44	while	.421	ns
39.	13	while	.411	ns
40.	45	though	.411	ns
41.	36	either	.400	ns
42.	41	yet	.389	ns
43.	32	when	.389	ns
44.	1	and (in addition to)	.379	ns
45.	55	and	.379	ns
46.	35	because	.379	ns
47.	29	while	.379	ns
48.	7	as (while)	.368	ns
49.	37	now	.368	ns
50.	38	since	.368	ns
51.	39	and	.358	ns
52.	60	since (because)	.358	ns

Easy Items

53.	30	but	.316	.0003369
54.	8	for	.263	.0000054
55.	6	and	.242	.0000003
56.	2	and	.242	.0000003
57.	21	as	.211	.0000001
58.	4	and	.200	.0000001
59.	10	and	.189	.0000001
60.	16	and	.179	.0000001
61.	17	and	.168	.0000001
62.	5	for	.126	.0000001
63.	3	and	.084	.0000001

Chi square was used to analyze the significantly difficult items and the significantly easy items to determine whether a hierarchy existed among the significantly difficult and the significantly easy items. The items were compared with each other statistically to determine whether one item was significantly more difficult or easy than the other items on the list. Among the difficult conjunctions when was significantly more difficult than the other difficult conjunctions, at the .001 level. So was significantly more difficult than all other conjunctions except but at the .001 level. But (meaning other than) was significantly more difficult than all other conjunctions except so at the .001 level. Or was significantly more difficult than all other conjunctions except when, so, but, and where, at the .01 level. Where was significantly more difficult than all other conjunctions except when, so, but, and or at the .01 level. So is significantly more difficult than all other conjunctions except when, but, or, and where, at the .01 level. This data is compiled in Table 18.

Among the significantly easy items on the Comprehension of Conjunctions Test, and was significantly more easy than all other conjunctions, at the .001 level. For was significantly more easy than all conjunctions except and at the .001 level. As was significantly more easy than all other conjunctions except and and for at the .005 level. This data is found in Table 19.

Hypothesis two, then, must also be accepted as the analysis of data indicates that there is a significant difference in the difficulty of various conjunctions. There are hierarchies of difficulty in understanding of conjunctions.

TABLE 18

HIERARCHY OF DIFFICULTY AMONG DIFFICULT ITEMS

Rank*	Item	Conjunction	Chi Square	Probability**
1.	46	when	35.73	.001
2.	54	so	23.48	.001
3.	12	but	20.47	.001
4.	49	when	10.94	.001
5.	23	or	6.64	.01
	47	where	6.64	.01
	61	so	6.64	.01
6.	58	while	2.55	ns***
	48	how	2.55	ns
7.	31	that	1.90	ns
8.	22	or	1.90	ns
9.	26	it	1.80	ns
10.	62	where	1.80	ns
11.	27	so	1.71	ns
	42	but	1.71	ns
12.	63	while	.68	ns
13.	30	how	.27	ns
14.	24	than	.19	ns
15.	19	but	00	ns
	40	but	00	ns

*Rank in descending order of difficulty - item 1. is most difficult
    or most easy.
**p = .05
***ns = not significant

TABLE 19

HIERARCHY OF DIFFICULTY AMONG EASY ITEMS

Rank*	Item	Conjunction	Chi Square	Probability**
1.	3	and	11.59	.001
2.	5	for	11.21	.001
3.	17	and	11.45	.001
4.	16	and	15.00	.001
5.	10	and	25.46	.001
6.	4	and	21.00	.001
7.	21	as	7.4	.005
8.	2	and	4.5	.025
	6	and	4.5	.025
9.	8	for	15.0	.001
10.	20	but	0000	ns***

*Rank in descending order of difficulty - item 1. is most difficult or most easy.

**p = .05

***ns = not significant

The Relationship Between Demographic Variables
and Comprehension of Conjunctions

The third hypothesis of this study was that a significant rela-
tionship existed between understanding conjunctions and the demo-
graphic variables of sex, socioeconomic level, and intelligence. The
Cloze Comprehension of Conjunctions Test, the Comprehension of Con-
junctions Test, and The Pintner Test of Mental Ability were used to
collect the data necessary to examine this hypothesis. The computer
program provided eta coefficients for the demographic variables on these
three measures.

Sex and the Comprehension of Conjunctions:

Girls understood conjunctions better than boys on every meas-
ure; however, the difference in comprehension of conjunctions was sig-
nificant on only one measure. The correlation coefficient for the Cloze
Comprehension of Conjunctions Test written with a high number of con-
junctions was .300000 which is significant at the .01 level. The cor-
relation coefficient for the Comprehension of Conjunctions Test was
.03388 which was not significant. The correlation coefficient for the
Cloze Comprehension of Conjunctions Test passages written with half as
many conjunctions was .07244 which was not significant, and the cor-
relation coefficient for the passage written with no conjunctions was
.08675 which was not significant. This data is compiled in Table 20.

TABLE 20

SEX AND COMPREHENSION OF CONJUNCTIONS

Measure	Correlation Coefficient	Significance
Comprehension of Conjunctions Test	0.03388	ns*
Cloze Comprehension of Conjunctions High Conjunctions	0.30000	.01
Cloze Comprehension of Conjunctions Half Conjunctions	0.07244	ns
Cloze Comprehension of Conjunctions No Conjunctions	0.08675	ns

*ns = not significant

Socioeconomic Level and Compre-
hension of Conjunctions:

Socioeconomic level was correlated with the four measures of

comprehension of conjunctions. The correlation coefficient for socio-

economic level and The Comprehension of Conjunctions Test was .5195

which is significant at the .001 level. The correlation coefficients for

socioeconomic level and The Cloze Comprehension of Conjunctions Test

passages are as follows: the passage w   ·h conjunctions, .3967,

which is significant at the .001 level; tl   ·sage with half as many

conjunctions, .4141, which is significar   the .001 level; and the

passage written with no conjunctions, .49   , which is significant at the

.001 level. Thus, it is apparent that there   a high positive correlation

between socioeconomic level and comprehension of conjunctions. Sub-

jects at high socioeconomic levels comprehended conjunctions better

than students at the average socioeconomic level, and average socio-

economic level subjects comprehended better than subjects at the low

socioeconomic level. This data is compiled in Table 21.

TABLE 21

SOCIOECONOMIC LEVEL AND COMPREHENSION OF CONJUNCTIONS

Measure	Correlation Coefficient	Significance
Comprehension of Conjunctions Test	.5196	.001
Cloze Comprehension of Conjunctions High Conjunctions	.3967	.001
Cloze Comprehension of Conjunctions Half Conjunctions	.4141	.001
Cloze Comprehension of Conjunctions No Conjunctions	.4931	.001

Intelligence and Comprehension of
Conjunctions:

The intelligence quotients of the subjects were correlated with

the four measures of comprehension of conjunctions. The correlation

coefficient for intelligence and The Comprehension of Conjunction Test

was .6446 which is significant at the .001 level. The correlations be-

tween intelligence and the Cloze Comprehension of Conjunctions Test

passages are as follows: the passage with a high number of conjunc-

tions, .6364, which is significant at the .001 level; the passage with

half as many conjunctions, .6747, which is significant at the .001 level;

and the passage with no conjunctions, .4931, which is significant at

the .001 level. Thus, there is a high positive relationship between in-
telligence and comprehension of conjunctions. As the intelligence quo-
tient increases, the comprehension of conjunctions increases. This data
is compiled in Table 22.

TABLE 22

INTELLIGENCE AND COMPREHENSION OF CONJUNCTIONS

Measure	Correlation Coefficient	Significance
Comprehension of Conjunctions Test	.6446	.001
Cloze Comprehension of Conjunctions Test		
High Conjunctions	.6364	.001
Half Conjunctions	.6747	.001
No Conjunctions	.4931	.001

Hypothesis three may also be accepted; there is a significant
relationship between demographic variables and comprehension of con-
junctions. The relationship between socioeconomic level and compre-
hension of conjunctions is a high positive relationship which is signifi-
cant on every measure. The relationship between intelligence and com-
prehension of conjunctions is also a high positive relationship which is
significant on every measure. The relationship between sex and compre-
hension is significant on only one measure; however, girls do achieve
higher than boys on every measure. The one measure which was statis-
tically significant in correlating comprehension of conjunctions and sex

was the Cloze Comprehension of Conjunctions Test passage with a high number of conjunctions.

Summary

The general objective of this study was to determine if an understanding of various conjunctions was related to reading comprehension. Three hypotheses were explored in relation to this objective.

Four instruments were used to collect data relating to a stratified random sample of fourth grade students. In addition to the test scores, data was collected regarding the sex, socioeconomic level and intelligence of each subject. Examination of the test scores from the four instruments shows a wide variability of student response on each measure.

Hypothesis one, there is a significant relationship between a subject's ability to identify the relationships that conjunctions signal and reading comprehension. The correlation between a subject's ability to identify the relationships that conjunctions signal and his reading comprehension was significant at the .02 level as measured by The Comprehension of Conjunctions Test and the Stanford Reading Achievement Test with intelligence partialed out. The Cloze Comprehension of Conjunctions Test was also used to explore this relationship. The analyses of variance for the difference in achievement in passages written with a high number of conjunctions, passages written with half as many conjunctions, and a passage written with no conjunctions were all significant at the .001 level.

Hypothesis two, there is a significant difference in the difficulty of various conjunctions. The difference in difficulty of comprehension of various conjunctions was found significant. The item analysis, binomial test, and the chi square provided indices of relative difficulty for various conjunctions.

Hypothesis three, there is a significant difference between comprehension of conjunctions by boys and girls: there is a significant difference in comprehension of conjunctions at various socioeconomic levels; and there is a significant difference in comprehension of conjunctions at various levels of intelligence. Data collected in this investigation indicates that there is a significant relationship between each of the demographic variables and comprehension of conjunctions. However, girls were significantly higher than the boys on only one measure.

This chapter has described the collection and analysis of data. The following chapter will present the conclusions based upon the data presented and discussed in this chapter.

CHAPTER V

SUMMARY AND CONCLUSIONS

The reading skills of American children have long been of
concern to educators and public alike. Commissioner of Education,
Allen heightened this concern with his recent "right to read" statement.
The recent requests for proposals sent out by the United States Office
of Education, focus on the various dimensions of reading in an effort to
determine ways of extending "the right to read" to every child. Reading
comprehension is chief among reading problems that educators and re-
searchers must solve. Nila Banton Smith states the problem of under-
standing the reading process eloquently in this quotation, "we chopped
down and cleared away the large virgin trees, but perhaps some of the
humble shrubs or creeping vines or fragile mosses may hold even more
significance for us than the strikingly obvious, first-sight timbers."[1]
This investigation has been an effort to explore what might be termed
one of the creeping vines in relation to reading.

In view of the concern and need for understanding reading
comprehension, this study was undertaken as an effort to determine if
understanding of conjunctions was related to reading comprehension.

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[1] Smith, op. cit., p. 426.

Three hypotheses gave direction to the study which was conducted with

a stratified random sample of fourth grade students. The overarching

purpose was the exploration of the relationship between a subject's

understanding of conjunctions and his reading comprehension. Another

purpose was to explore the difference in the difficulty of various con-

junctions. The third purpose was related to the relationship between

understanding conjunctions and the demographic variables of socio-

economic level, sex, and intelligence. The three hypotheses inves-

tigated in this study were:

1. There is a significant correlation between a sub-

   ject's ability to identify the relationships that

   conjunctions signal and his reading comprehension.

2. There is a significant difference in the difficulty

   of various types of conjunctions, for example and

   is easier to understand than is for.

3. There is a significant relationship between under-

   standing conjunctions and demographic variables

   of sex, socioeconomic level, and intelligence.

Test Construction

Since this study was designed for the purpose of investigat-

ing the relationship between reading comprehension and comprehension

of conjunctions, instruments were required to measure these variables.

A multiple-choice test, The Comprehension of Conjunctions, was one

of the instruments designed to investigate understanding of conjunc-

tions. In order to develop this instrument it was necessary to identify the words which function as conjunctions and the conjunctions' most frequent usage. The following words were those identified as conjunctions used most frequently through the fourth grade: and, as, because, but, either, for, if, how, now, neither, nor, now, or, since, so, than, that, though, where, when, while, why and yet. Working definitions were developed by the principal investigator for the conjunctions selected to study. Multiple choice test items were developed on the basis of these definitions.

The original multiple choice test was composed of fifty items with four response options. It was administered in two fourth grade intact classrooms with a total of 60 subjects. The purpose of the preliminary administration of the test was to establish validity of the test and of the individual test items. An item analysis was performed to establish validity of the items, this revealed that two items had negative discrimination powers; therefore, they were eliminated from the test. The Kuder-Richardson formula 21 yielded a reliability coefficient of .88 for the preliminary test. The test was extended to sixty-three items in an effort to raise the reliability of the instrument. This multiple choice instrument of sixty-three items constituted the Comprehension of Conjunctions Test used for the investigation. The Kuder-Richardson formula 20 yielded a reliability coefficient of .898, and the Kuder-Richardson formula 21 yielded a reliability coefficient of .880 for the final instrument.

The Cloze Comprehension of Conjunctions Test was developed as a second instrument for measuring comprehension of conjunctions. A cloze technique consists of replacing every fifth word in a reading passage with a blank of standard length. The test consisted of three 200 word passages; one passage was written with a high number of conjunctions, the second passage was written with half as many conjunctions, and the third passage was written with no conjunctions. Sentence length, vocabulary load, and prepositional phrases of these passages were controlled using the Lorge formula, so that the problem the subjects encountered in completing the passages was the difference in number of conjunctions.

Two standardized tests were also used to collect data. The Stanford Achievement Test in reading was used to measure reading comprehension achievement. Mental ability was measured with the Pintner Mental Ability Test.

The Collection and Treatment of Data

A stratified random sample of subjects was used for this study because previous research indicates that various socioeconomic levels may have different strengths in language abilities. Both Robertson[2] and Marcus[3] found that achievement varied with socioeconomic level. The sample included ninety-five fourth grade students selected randomly

[2]Robertson, op. cit., p. 285.

[3]Marcus, op. cit., p. 13.

from a fourth grade student population at three socioeconomic levels in
Mansfield, Ohio Public City Schools.

The four instruments were administered to subjects by four
graduate students majoring in elementary education. Administration
took place in small group sessions located in the elementary schools
attended by the subjects. The Comprehension of Conjunctions Test and
The Cloze Comprehension of Conjunctions Test were untimed instru-
ments as they were designed to measure power of comprehension of
conjunctions. The Stanford Achievement Test and The Pintner Mental
Ability Test were administered according to the standardized instruc-
tions which accompany the instruments. The tests were administered
and scored by four graduate students assisted by two undergraduate
students, all of whom were majoring in elementary education. After
the tests were scored the scoring was rechecked for accuracy.

Analysis of the data was accomplished through the use of the
following statistical procedures. Item analysis was used to check the
reliability and validity of the test. Item analysis was also used to
identify difficult test items and to analyze student achievement on test
items. Kuder-Richardson formulas 20 and 21 were used to check the
internal reliability of the test. A partial correlation coefficient was
computed between reading comprehension and comprehension of con-
junctions while controlling the effects of intelligence. Three one-way
analyses of variance were computed to test the significance of varia-
tions in student achievement on the three Cloze Comprehension of
Conjunctions Test passages. The significance of difficulty for test

items on The Comprehension of Conjunctions Test was analyzed through computation of the binomial test and chi square. Eta correlation coefficients were computed to assess the relationships between the demographic variables and comprehension of conjunctions.

Computer program BMDO3R was programmed by the Computer Center at The Ohio State University. This computer program provided the correlation coefficients and the basic data required for computation of the analyses of variance and the partial correlation coefficient. The item analysis and Kuder-Richardson formulas 20 and 21 were programmed for IBM by the Evaluation and Measurement Center at The Ohio State University. This program provided data for computing the binomial test and the chi square.

Findings and Conclusions

This section has a twofold purpose one of which is to present the findings and conclusions related to each of the three hypotheses. The second purpose is to discuss the implications of the study. The findings of this study are summarized in Table 23.

Findings and Conclusions for Hypothesis I

The objective of hypothesis one is to determine whether a significant correlation exists between a subject's ability to identify the relationships that conjunctions signal and his reading comprehension. A partial correlation coefficient, controlling for intelligence was computed between comprehension of conjunctions and reading comprehension. It yielded a correlation coefficient of .2415 which is significant

TABLE 23

SUMMARY OF RESULTS

Hypothesis	Partial Correlations	Analysis of Variance	Chi Square	Eta Correlation	Probability*
I. Conjunctions and Comprehension:					
Comprehension of Conjunctions Test	.415				.02
Cloze Comprehension of Conjunctions Test					
High Conj. and None		61.83			.001
No Conj. and Half		35.93			.001
High Conj. and Half		8.75			.001
II. Hierarchy of Difficulty					
Difficult Conjunctions			35.73 to .19		.001 to ns**
Middle Conjunctions			00		ns
Easy Conjunctions			11.59 to 4.5		.001 to ns
III. Demographic Variables					
Sex					
Comprehension of Conjunctions Test				.03388	ns

*P = .05
**ns = not significant

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TABLE 23 (CONTINUED)

SUMMARY OF RESULTS

Hypothesis	Partial Correlation	Analysis of Variance	Chi Square	Eta Correlation	Probability
Cloze Comprehension of Conjunctions Test					
High Conjunctions				.30000	.01
Half Conjunctions				.72444	ns
No Conjunctions				.08675	ns
Socioeconomic					
Comprehension of Conjunctions Test				.5196	.001
Cloze Comprehension of Conjunctions Test					
High Conjunctions				.3967	.001
Half Conjunctions				.4141	.001
No Conjunctions				.4931	.001
Intelligence					
Comprehension of Conjunctions Test				.6446	.001
Cloze Comprehension of Conjunctions Test					
High Conjunctions				.6347	.001
Half Conjunctions				.6747	.001
No Conjunctions				.4931	.001

at the .02 level. Thus, hypothesis one was supported in this part of the study, there is a significant relationship between reading comprehension and comprehension of conjunctions.

Hypothesis one was further explored through the use of the Cloze Comprehension of Conjunctions Test. Analyses of variance were computed to analyze this measure. The analysis of variance between the passage using a high number of conjunctions and the passage containing no conjunctions was 61.83 which is significant at the .001 level. The analysis of variance between the passage using half as many conjunctions and the passage using no conjunctions was 35.93 which is significant at the .001 level. The analysis of variance for the passage containing a high number of conjunctions and the passage containing an average number of conjunctions was 8.75 which is significant at the .001 level. Again, hypothesis one was supported in this study.

The relationship indicated by the correlation between reading comprehension and understanding of conjunctions may be because conjunctions related ideas. The relationship of ideas may be difficult for the fourth grade student to understand. Flesch calls connectors, "word bridges."[4] He also says that "connectors tell the reader exactly in what way the ideas are tied together." Fourth grade students may be having difficulty understanding how conjunctions tie ideas together.

The correlation between reading comprehension and understanding of conjunctions also suggests that perhaps instruction is

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[4]Flesch, op. cit., p. 57.

required in the meaning and usage of conjunctions. Perhaps this instruction should become a part of reading instruction for children at the fourth grade or prior to fourth grade since the words investigated in this study were most frequently used through the fourth grade level.

The analyses of variance between the three Cloze Comprehension of Conjunctions Test passages suggests that the number of conjunctions in a passage is a factor in readability. One explanation for the difference may be that when conjunctions are not used ideas may be tied together in a more direct fashion, making comprehension easier. Flesch says that the "neatest" way of tying words together is to use no connecting words whatsoever.[5] For example, "The game must stop. The boys have to work." In this example the word because is not needed. The reader understands because in this situation without it being said. The sentences show the relationship of ideas directly. When examining the Cloze Comprehension of Conjunctions Test passage written with no conjunctions, it appears that the writer repeated nouns and verbs more frequently when conjunctions were not used. This fact seemed to make the meaning more direct.

Since the number of conjunctions in a passage is related to readability of the passage, the possibility of making a count of conjunctions a part of readability formulas should be investigated. This also suggests that readability of instructional materials could be improved through controlling the number of conjunctions used.

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[5] Ibid.

Findings and Conclusions for Hypothesis II

The objective of hypothesis two is to determine whether there is a significant difference in the difficulty of various types of conjunctions. The binomial test, chi square, and item analysis were used to analyze the data related to this hypothesis. The item analysis and the binomial test were computed to establish which items were significantly difficult and significantly easy for the subjects on the Comprehension of Conjunctions Test.

Thirteen of the sixty-three items were established as significantly difficult for the subjects in this study. These thirteen items represent nine different conjunctions. The difficulty level of these significantly difficult items ranges from 1916 to .558 and the range of significance was from .0000001 to .1334994. The most difficult conjunctions according to this analysis were: when, so, but, or, where, while, how, that, and if. Among the difficult conjunctions when was significantly more difficult than the other difficult conjunctions, at the .001 level. So was significantly more difficult than all the other conjunctions except but, at the .001 level. But was significantly more difficult than all other conjunctions except so at the .001 level. Or was significantly more difficult than all other conjunctions except so at the .001 level. Or was significantly more difficult than all other conjunctions except when, so, but and where at the .01 level. Where was significantly more difficult than all other conjunctions except when, so, but, and or at the .01 level. So was significantly more difficult than all other conjunctions except when, but, or, and where at the .01 level.

Eleven items were found to be significantly easy for the subjects. The difficulty level of these items ranged from 1084 to .316, and the significance of difficulty ranged from .0000001 to .0003369. The eleven significantly easy items represent four different conjunctions, how, and, for, and as. Among the easy items on the Comprehension of Conjunctions Test, and was significantly more easy than all conjunctions except and at the .001 level. As was significantly more easy than all other conjunctions except and and for at the .05 level. Thus, the hierarchy of difficulty among the difficult and easy items on this test, and the analysis of this hierarchy, represents support for hypothesis two.

Discussion of Findings Regarding Hypothesis II

Among the significantly difficult conjunctions, the conjunctions which signal incorporation seem to be chief among those causing difficulty. The most difficult conjunctions, when, where, that, how, and if were all conjunctions of incorporation. Incorporation requireu relating or uniting two entities; therefore, the relationship between two entities may have been a problem for subjects in this study.

The conjunctions, but and while present contrasting relationships to the reader. He must hold one idea in mind and contrast it with another. Or is a conjunction of alternation which causes the reader to hold ideas in mind and contrast them. The reader must mentally move back and forth between ideas. Thus, it appears that holding ideas in mind in order to contrast them was difficult for the fourth grade students in this study.

Among the easy conjunctions it appears that the relationship of simple addition was most easy for the subjects. _And_ represents this relationship which is one in which the content or ideas added to the sentence by _and_ does not change the ideas or content preceding _and_; therefore, the reader does not have to hold ideas in mind. _How_ is an easy item which represented a relationship of incorporation, but the material incorporated did not require the reader to hold previous information in mind as the incorporated information did not change the information preceding _how_. _For_ was also used in the sense of adding information without changing previous information. _As_ was the only one of the easy conjunctions which required the reader to hold information in mind. _As_ may have been easy for the subjects in this study because it required them to think of similarities, while the difficult conjunctions required the subject to think of differences. _As_ required the subject to think of similarities because _as_ signals a relationship of comparison.

In comparing the problems presented by the difficult and easy conjunctions it seems that to hold ideas in mind and to relate them is a difficult operation for the reader in this study. The conjunctions which did not require the reader to hold information in mind were easier for these subjects. It also seems easier for the subjects to think of similarities between ideas or information than to think of differences. This difficulty may also indicate that the subjects did not know which words in the sentence were most significant in working out the meaning of the sentence. They may not have assigned enough importance to certain conjunctions when these conjunctions were functioning in a

fashion which could change meaning. These findings may indicate that the relationship of simple addition and contrast are those which are easiest to learn while the more difficult relationships in this study require longer to develop. Because certain relationships require longer for development and are more difficult, they may require instruction as a part of the developmental reading program.

Findings and Conclusions for Hypothesis III

The objective of hypothesis three was investigation of the relationship between understanding conjunctions and the demographic variables of sex, socioeconomic level, and intelligence. In order to explore this relationship the comprehension of conjunctions measures were correlated with the demographic variables.

The relationship between comprehension of conjunctions and sex is not clear cut. Girls comprehend conjunctions better than boys on all measures; however, the difference between boys and girls was statistically significant on only one measure. The girls were significantly higher than boys on the Cloze Comprehension of Conjunctions Test written with a high number of conjunctions, the correlation was .30000 which is significant at the .01 level. The correlation for the Comprehension of Conjunctions Test was .03388. The correlations for the Cloze Comprehension of Conjunctions Test passages with half as many conjunctions was .07244, and for the passage with no conjunctions it was .08676.

This difference in significance may be due to the fact that the Cloze Comprehension of Conjunctions Test written with a high number of conjunctions was the most difficult of the three cloze tests. It may be that as the test became more difficult the girls' achievement became more significant. The more difficult test may have also frustrated the boys more and thus pushed their achievement down as it became more difficult. The more difficult test may have provided more opportunity for the student who comprehends well to surpass the student who does not comprehend well.

Correlating socioeconomic level and the four measures of comprehension of conjunctions provided the following correlations: Comprehension of Conjunctions Test, .5196 which is significant at the .001 level; the Cloze Comprehension of Conjunctions Test with a high number of conjunctions, .2967, significant at the .001 level; Cloze Comprehension of Conjunctions Test with half as many conjunctions, .4141, significant at the .001 level; and the Cloze Comprehension of Conjunctions Test with no conjunctions, .4947 which is significant at the .001 level. There is a high positive correlation between socioeconomic level and comprehension of conjunctions. Therefore, children at high socioeconomic levels understand conjunctions better than children at average socioeconomic levels, and children at average socioeconomic levels understand conjunctions better than children at low socioeconomic levels. This finding is supported by past research by Marcus[6] which indicates that children at different socioeconomic

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[6]Marcus, op. cit., p. 13.

levels achieve in different ways. This study is further supported by

the Marcus[7] study which suggests that lower socioeconomic level

children have more difficulty understanding relationships.

Correlating the measures of comprehension of conjunctions

with mental ability provides the following correlation coefficients: the

Comprehension of Conjunctions Test, .6446, significant at the .001

level; the Cloze Comprehension of Conjunctions Test with a high number

of conjunctions, .6364, significant at the .001 level; the Cloze Com-

prehension of Conjunctions with half as many conjunctions .6747,

significant at the .001 level; and the Cloze Comprehension of Conjunc-

tions Test with no conjunctions, .6125, significant at the .001 level.

The high positive relationship between intelligence and comprehension

of conjunctions indicates that as intelligence increases so does com-

prehension of conjunctions. This finding is supported by previous re-

search which indicates that reading comprehension is related to intel-

ligence.[8]

Discussion of Findings Regarding Hypothesis III

Each of the three demographic variables was positively

related with comprehension of conjunctions; therefore, hypothesis three

is suppoted by the findings of this study. Intelligence and socio-

economic level were significantly related with comprehension of

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[7]Ibid.

[8]Schoeller, op. cit., p. 199.

conjunctions; while sex was positively related with comprehension of conjunctions this relationship was significant only in one aspect, the Cloze Comprehension of Conjunctions Test passage written with a high number of conjunctions.

Summary of the Relationships Between Comprehension and Understanding of Conjunctions

Hypothesis one is accepted. There is a significant relationship between reading comprehension and understanding conjunctions. A partial correlation computed between the Comprehension of Conjunctions Test and the reading comprehension score from the Stanford Reading Achievement Test was significant with a probability of $p < .02$. An analysis of variance was computed for each of the scores on the Cloze Comprehension of Conjunctions Tests, one written with a high number of conjunctions, the second written with half as many conjunctions, and the third written with no conjunctions. The analyses of variance were all highly significant with a probability of $p < .001$.

Hypothesis two is also accepted. Nine different conjunctions were found to be significantly difficult, and four different conjunctions were found to be significantly easy. The significance of difficulty ranged from p .000001 to .1334995. The significance of difficult conjunctions ranged from p .000001 to .0003369. The conjunctions found to be most easy were when, so, but, or, where, while, how, that, and if. The easiest conjunctions were and, how, for, and as.

Hypothesis three, is also accepted. The correlation coef-
ficients between sex and the measures of comprehension of conjunc-
tions show that girls achieved higher than boys on these measures;
however, the difference in achievement was significant on only one
measure, the Cloze Comprehension of Conjunctions Test written with a
high number of conjunctions. The probability for this measure was
$p. < .01$. There was a high positive relationship between socioeconomic
level and all measures of comprehension of conjunctions. The probabil-
ity on every measure was $p. < .001$. The correlation between compre-
hension of conjunctions and intelligence quotient was also a high
positive correlation with probability of $p. < .001$ on every measure.

Implications for Practice and Research

Since this study established a relationship between reading
comprehension and understanding of conjunctions it appears that the
developmental reading program should give more attention to systematic
teaching of conjunctions and the relationships they signal. The con-
junctions which have been found to be significantly difficult should be
introduced with instruction which will enable students to use these
words with precision and understanding.

It also appears that more attention should be given to the role
of conjunctions in the readability of material. Currently, five basic
types of control are used in preparing reading materials: number of words,
sound-letter associations, interest, literary, and structure of language.
This study suggests that conjunctions may play a role in the difficulty

of reading materials. Results of this study indicate that fourth grade
children had more difficulty reading materials written with a high number
of conjunctions, and with half as many conjunctions when compared
with a passage written with no conjunctions; therefore, controlling the
number of conjunctions in written content would apparently aid in con-
trolling readability of content.

The findings of this study provide indications for improving
instruction of disadvantaged students in the area of reading comprehen-
sion. Comprehension is a particular problem for these students.
Teachers in the past have assumed that disadvantaged students were
inattentive, while this study indicates that they have difficulty under-
standing relationships. Instruction regarding the relationships signaled
by conjunctions may improve comprehension for these students.

Greater individualization of instruction is suggested by the
findings in this study. Since children with lower intelligence test
scores were lower in comprehension of conjunctions, they may require
assistance in understanding conjunctions and the relationships they
signal. Although the difference between boys and girls is not so clear-
cut there are indications that boys may lag behind girls in understanding
conjunctions. Therefore, boys may require additional assistance in
developing understanding of conjunctions.

Since this study has extended knowledge in terms of recog-
nizing the "smaller" linguistic factors in relationship to comprehension,
perhaps words such as prepositions are important. Other linguistic
factors involved in sentence construction such as punctuation may

warrant greater attention than they have been granted in the past.

The methodology used in this study may be useful in future studies. The tests used, and the approach of using both a multiple choice test and cloze passages written with varying numbers of conjunctions may prove fruitful modes of approaching the problem of assessing comprehension. Evaluation of comprehension has long been a problem, and this problem is underscored by the outcomes of the current study since this study further indicates the complexity of reading comprehension.

Since certain conjunctions were more difficult for the subjects in this study, an interesting follow-up study would be one which relates written and spoken use of conjunctions. For example, do students use the more difficult conjunctions in their own speech, and unsupervised writing?

Chomsky[9] has proposed that the syntactic component of the sentence must generate and interrelate deep and surface structure. Since conjunctions are structure words which relate to both syntax and semantics, and the outcomes of this study indicate that conjunctions are difficult for some subjects to understand, a study of the relationship of conjunctions to deep and surface structure could be a fruitful area of investigation.

The complexity of reading comprehension, and the constellation of skills which comprise this ability are reaffirmed by this study.

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[9]Chomsky, op. cit., p. 49.

This study shows that the "creeping vines" and "fragile mosses" suggested by Smith[10] do hold significance for understanding reading comprehension.

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[10]Smith, op. cit., p. 426.

BIBLIOGRAPHY

Alden, Clara; Sullivan, Helen R.; and Durrell, Donald, "The Frequency
    of Special Reading Disabilities." Education, XXXXII (1942),
    pp. 32-36.

Alderman, G. H., "Improving Comprehension in Reading." Journal of
    Educational Research, XIII (1926), pp. 11-21.

Arbuthnot, "Old Values in New Books." in Ivory, Apes, and Peacocks,
    Champaign, Illinois: National Council of Teachers of English,
    1968.

Artley, Steryl, "General and Specific Factors in Reading Comprehen-
    sion." Journal of Experimental Education. XXXXV (1948),
    pp. 181-190.

Barrett, Thomas C., "Taxonomy of Cognitive and Affective Dimensions
    of Reading Comprehension." Innovation and Change in Reading
    Instruction. Sixty-Seventh Yearbook of the National Society
    for the Study of Education, Part II. Chicago: University of
    Chicago Press, 1968.

Baugh, Albert C., A History of the English Language. New York:
    Appleton-Century-Crofts, Inc., 1957.

Barnhart, Clarence L., ed., The World Book Dictionary. Chicago's
    Field Enterprises Corp., 1963.

Bereiter, Carl and Engleman, Seigfried, Teaching Disadvantaged Child-
    ren in the Preschool. Englewood Cliffs, New Jersey: Prentice-
    Hall, 1966.

Bernstein, Margery R., "Relationship between Interest and Reading
    Comprehension." Journal of Educational Research, (December,
    1955).

Berry, Betty Trier, "Improving Freshman Reading Habits." English
    Journal. XXX, (1931), pp. 824-828.

Betts, Emmett Albert, "Research on Reading as a Thinking Process."
    Journal of Educational Research, (September, 1965), p. 1.

Borg, Walter B., Educational Research: An Introduction. New York:
    David McKay Company, Inc., 1936.

Bormuth, John R., "The Effectiveness of Current Procedures for Teach-
    ing Reading Comprehension." a paper presented to the Annual
    Convention of the National Council of Teachers of English in
    Milwaukee, Wisconsin, November 29, 1968.

Bormuth, John R., "Teaching Sentence Comprehension." a paper presented at the Symposium on Reading as a Psycholinguistic Process, American Educational Research Association, February, 1967.

Bormuth, John R., "An Operational Definition of Comprehension Instruction." Psycholinguistics and the Teaching of Reading. ed. Kenneth S. Goodman, and James T. Fleming, Newark, Delaware: The International Reading Association, 1968.

Bormuth, John R., "Comparisons among Cloze Test Scoring Methods." Reading and Inquiry. ed. J. A. Figurel, 1965.

Bormuth, John R., "Factor Validity of Cloze Tests as Measures of Reading Comprehension Ability." Reading Research Quarterly, (Spring, 1969), pp. 358-365.

Brown, R. and Fraser C., "The Acquisition of Syntax." Verbal Behavior and Learning. eds. C. N. Cofer and B. S. Musgrace, New York: McGraw-Hill, 1963.

Buswell, Guy T. and Wheeler, William H., The Silent Reading Hour. Chicago: Wheeler Publishing Co., 1923.

Card, William and McDavid, Virginia. "Frequencies of Structure Words in the Writing of Children and Adults." Elementary English, (December, 1965), pp. 878-882.

Carroll, Robert P. An Experimental Study of Comprehension in Reading. New York: Bureau of Publications, Teachers College, Columbia University, 1926.

Chomsky, Noam, "Language and the Mind." Psychology Today. (January, 1969), p. 48.

Cleland, Donald L., "A Construct of Comprehension." Reading and Inquiry. Newark, Delaware: International Reading Association, 1965.

Coleman, J. S., Equality of Educational Opportunity. Washington, D. C., U. S. Government Printing Office, 1969.

Dale, Edgar and Chall, Jeanne S., A Formula for Predicting Readability. Columbus, Ohio: Bureau of Educational Research, The Ohio State University, 1948.

Davis, Edith A., The Development of Linguistic Skills in Twins, Singletons, with Siblings, and only Children From Age Five to Ten Years. Minneapolis: University of Minneapolis Press, 1937.

Davis, F. B., "Fundamental Factors of Comprehension in Reading." Psychometrika, IX (1944), pp. 185-197.

Davis, F. B., "Research in Comprehension in Reading." Reading Research Quarterly, (Summer, 1968), pp. 501-545.

Deighton, Lee C., "Experience and Vocabulary Development." Reading and Inquiry. Newark, Delaware: International Reading Association, 1956.

Dolch, E. W., Methods in Reading. Champaign, Illinois: The Garrard Press, 1955.

Downie, N. M. and Heath, R. W., Basic Statistical Methods. New York: Harper and Row, Publishers, 1959.

Durrell, Donald D., Improving Reading Instruction. Yonkers-on-Hudson: World Book, 1956.

Dykstra, Robert, "The Cooperative Research Program in Primary Reading." Reading Research Quarterly. (Fall, 1968).

Fay, Leo, "The Relationship between Specific Reading Skills and Selected Areas of Sixth Grade Achievement." Journal of Educational Research. XLIII, (1950), p. 541.

Fernald, James C., Connectives of English Speech. New York: Funk and Wagnalls Company, 1904.

Flesch, Rudolf, A New Guide to Better Writing. New York: Popular Library, 1963.

Flesch, Rudolf, "A New Readability Yardstick." Journal of Analytic Psychology. (1948), pp. 239-253.

Frase, Lawrence T., "Cybernetic Control of Memory While Reading Connected Discourse." Journal of Educational Psychology, LX, (1968), pp. 49-55.

Fries, Charles Carpenter, American English Grammar. New York: Holt, Rinehart and Winston, 1963.

Fries, Charles Carpenter, Linguistics and Reading. New York: Holt, Rinehart and Winston, 1944.

Gallant, Ruth, "Use of Cloze Tests as a Measure of Readability in the Primary Grades." Reading and Inquiry, ed. J. A. Figurel, Newark, Delaware: The International Reading Association, 1965.

Goodman, Kenneth S., "Words and Morphemes in Reading," Psycholinguistics and the Teaching of Reading. eds. Kenneth S. Goodman and James Fleming, Newark, Delaware: The International Reading Association, 1968.

Gray, William S., The Relation of Silent Reading to Economy in Education. Sixteenth Yearbook, Part I, National Society for the Study of Education, Bloomington, Illinois: Public School Publishing Company, 1917.

Gray, William S., "The Major Aspects of Reading." in Sequential Development of Reading Abilities. ed. Helen Robinson, Chicago: University of Chicago Press, 1960.

Gray, William S. and Leary, Bernice A., What Makes a Book Readable. Chicago: The University of Chicago Press, 1935.

Harrell, L. E. Jr., A Comparison of the Development of Oral and Written Language in School-age Children. Monograph of the Society for Research in Child Development, XII, (1957).

Harris, C. W., "Measurement of Comprehension in Literature." The School Review. LVI, (1948), pp. 208-289; 332-342.

Hill, Archibald A., Introduction to Linguistic Structures. New York: Harcourt, Brace and Company, 1958.

Hilliard, G. H., Probable Types of Differences Underlying Some Scores in Comprehension Tests. State University of Iowa Studies in Education, Vol. 2, No. 6, Iowa City, Iowa: State University of Iowa, College of Education, 1924.

Holmes, Jack A., "Basic Assumptions Underlying the Substrata-Factor Theory." Reading Research Quarterly, I (Fall, 1965), pp. 4-28.

Huck, Charlotte S. and Kuhn, Doris Young, Children's Literature in the Elementary School, New York: Holt, Rinehart and Winston, 1961.

Huey, Edmund Burke, The Psychology and Pedagogy of Reading. New York: The Macmillan Co., 1908.

Hunt, Kellogg W., Grammatical Structures Written at Three Grade Levels. Champagin, Illinois: National Council of Teachers of English, 1965.

Hunt, L. C. Jr., "Can We Measure Specific Factors Associated with Reading Comprehension?" Journal of Educational Research, LI, (1957), pp. 161-171.

Hurlock, Elizabeth B., Child Development. New York: McGraw-Hill Book Company, Inc., 1956.

Ives, Summer, "Some Notes on Syntax and Meaning." Reading Teacher. (December, 1964), pp. 179-183.

Jan-Tausch, James, "Concrete Thinking as a Factor in Reading Comprehension," Challenge and Experiment in Reading. ed. J. A. Figurel, New York: Scholastic Magazine, 1962, pp. 160-164.

Jenkinson, M. E., Selected Processes and Difficulties in Reading Comprehension. Unpublished doctoral dissertation, University of Chicago, 1957.

Kelley, Truman L.; Madden, Richard; Gardner, Eric F.; Rudman, Herbert C., Stanford Achievement Test (Reading Series) New York: Harcourt, Brace and World Inc., 1964.

Kerfoot, James F., "Problems and Research Considerations in Reading Comprehension." Reading Teacher. (January, 1956), pp. 250-256.

Lefevre, Carl A., Linguistics and the Teaching of Reading. New York: McGraw-Hill Book Company, 1964.

Loban, Walter C., The Language of Elementary School Children. Champaign, Illinois: National Council of Teachers of English, 1963.

Long, Ralph B., The Sentence and Its Parts. Chicago: The University of Chicago Press, 1961.

Lorge, Irving, "Predicting Reading Difficulty of Selection for Children." Elementary English Review. (October, 1939), pp. 229-233.

Mane, Ethel Wain, Literal and Critical Reading in Science. Doctoral Dissertation, Philadelphia, Pennsylvania: Temple University, 1952.

Marzolf, Stanley S., The Third Mental Measurements Yearbook. ed. Oscar K. Buros, New Brunswick: Rutgers University Press, 1949.

Maw, Ethel, "Curiosity and Comprehension." The Reading Teacher. (January, 1962), p. 27.

McCarthy, Dorthea A., "The Language Development of the Preschool Child." University of Minnesota Institute of Child Welfare Monograph, 1942.

Mellon, John C., Complex and Conjunctive Tranformations. Culver, Indiana: Culver Military Academy, 1964.

Miller, W. and Ervin, S., "The Development of Grammar in Child Language." The Acquisition of Language. eds. U. Bellugi and R. Brown, Monographs of Society for Research in Child Development, 1964.

Morris, William, ed., The American Heritage Dictionary of the English Language. New York: American Heritage Publishing Co., Inc. and Houghton Mifflin Company, 1969.

Nuruss, Jean, "The Relationship of Syntactic Structure and Comprehension Difficulty." Reading Teacher, (March, 1969), p. 16.

O'Donnell, Ray C.; Griffin, William J.; Norris, Raymond C., Syntax of Kindergarten and Elementary School Children: A Transformational Analysis. Champaign, Illinois: National Council of Teachers of English, 1967.

Ogden, Charles K. and Richards, I. A., The Meaning of Meaning. New York: Harcourt, Brace and World, Inc., 1952.

Ostle, Bernard, Statistics in Research. The Ohio State College Press, 1954.

Parker, Francis W., Talks on Pedagogics. Chicago: Kellogg, 1894.

Philbrick, R. A., Understanding English. New York: The Macmillan Company, 1944.

Piaget, J., Judgment and Reasoning in the Child. London: Routledge and Kegan Paul, 1928.

Piekarz, Josephine A., "Getting Meaning from Reading." Elementary School Journal. (March, 1965), pp. 303-309.

Pintner, Rudolph, Pintner General Ability Tests. (Verbal Series), New York: Harcourt, Brace and World, Inc., 1942.

Richards, I. A., Practical Criticism. New York: Harcourt, Brace and Co., 1939.

Richardson, M. W. and Kuder, G. F. "The Calculation of Test Reliability Coefficients Based upon the Method of Rational Equivalence." Journal of Educational Psychology, XXX, (1939), pp. 681-687.

Rinsland, Henry D., Basic Vocabulary of Elementary School Children. New York: The Macmillan Company, 1945.

Roberts, Paul. Patterns of English. New York: Harcourt, Brace, and World, 1956.

Robertson, Jean A., "Pupil Understanding of Connectives in Reading." Reading Research Quarterly. (Spring, 1968), pp. 387-415.

Robinson, Helen M., "Unity of the Reading Act." Sequential Development of Reading Abilities. Supplementary ed. Monographs, ed. Helen M. Robinson, Chicago: University of Chicago Press, 1950.

Robinson, Helen M., The Sixth Mental Measurements Yearbook. ed. Oscar K. Buros, Highland Park, New Jersey: The Gryphon Press, 1965.

Ruddell, Robert B., "The Relation of Grapheme-Phoneme Correspondences and of Language Structure to Achievement in First Grade Reading." The Psycholinguistic Nature of the Reading Process. Detroit: Wayne State University Press, 1968.

Ruddell, Robert B., An Investigation of the Effects of the Similarity of Oral and Written Patterns of Language Structure on Reading Comprehension. Unpublished doctoral dissertation, Indiana University, 1963.

Sauer, Lois E., Fourth Grade Children's Knowledge of Grammatical Structure and its Relation to Reading Comprehension. A doctoral dissertation, University of Wisconsin, 1968.

Schoeller, Arthur W., A Critical Survey of the Scientific Studies of Reading Comprehension. Unpublished doctoral dissertation, Pittsburgh: University of Pittsburgh, 1950.

Shores, Harlan J., "Skills Related to the Ability to Read History and Science." Journal of Educational Research, XXXVI (1943), pp. 181-188.

Siegel, Sidney, Nonparametric Statistics. New York: McGraw-Hill Book Company, Inc., 1956.

Singer, Robert, Substrata-Factor Reorganization Accompanying Development of the Speed and Power of Reading at the Elementary School Level. Cooperative Research Project, No. 2100, Washington, D. C.: Office of Education, U. S. Department of HEW, 1965.

Smith, Helen K., "The Responses of Good and Poor Readers when Asked to Read for Different Purposes," Reading Research Quarterly. (Fall, 1967), pp. 53-83.

Smith, Helen K., Instruction of High School Students in Reading for Different Purposes. Chicago: The University of Chicago, 1966.

Smith, Henry P. and Dechant, Emerald V., Psychology in Teaching Reading. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1961.

Smith, M. E., "An Investigation of the Development of the Sentence and the Extent of Vocabulary in Young Children." University of Iowa Studies in Child Welfare, 1926.

Smith, Nila Banton, "The Many Faces of Reading Comprehension." The Reading Teacher. (December, 1969), p. 253.

Smith, Nila Banton, American Reading Instruction. Newark, Delaware: International Reading Association, 1962.

Sochor, E. Elona, Literal and Critical Reading in Social Studies. Doctoral Dissertation, Philadelphia, Pennsylvania: Temple University, 1952.

Spache, George, "A Minimum Reading-Spelling Vocabulary for Remedial Work." Journal of Educational Research. (November, 1939), pp. 161-173.

Squire, James R., "Multilevel Research in English," in Needed Research in the Teaching of English, ed. Erwin R. Steinberg, Carnegie Institute of Technology, 1962.

Stein, Jess, ed., The Random House Dictionary of the English Language. New York: Random House, Inc., 1967.

Strang, Ruth; McCullough, Constance M.; Traxler, Arthur E., The Improvement of Reading. New York: McGraw-Hill Book Company, 1967.

Stroud, J. B. and Lindquist, E. F., "Sex Differences in Achievement in the Elementary and Secondary School," Journal of Educational Psychology. XXXIII, (1943), pp. 657-667.

Tatham, Susan M., Reading Comprehension of Materials Written with Select Oral Language Patterns: A Study of Grade Two and Four. Research for the doctoral thesis at the University of Wisconsin-Madison, 1968.

Templin, Mildred C., Certain Language Skills in Children. Minneapolis: The University of Minnesota, 1957.

Terwilliger, Robert F., Meaning and Mind. New York: Oxford University Press, 1968.

Thorndike, E. L., "Reading as Reasoning: A Study of Mistakes in Paragraph Reading." Journal of Educational Psychology. VIII, (1917), pp. 323-332.

Thorndike, E. L., "The Understanding of Sentences." Elementary School Journal, XVIII, (1917), pp. 98-114.

Waterman, John T., Perspectives in Linguistics. Chicago: The University of Chicago Press, 1963.

Weaver, W. W., "Theoretical Aspects of the Cloze Procedure." in The Philosophical and Sociological Bases of Reading. ed. Eric L. Thurston and Lawrence E. Hafner. Fourteenth Yearbook of the National Reading Conference, Milwaukee: National Reading Conference, Inc., 1965.

Webb, Russell J., Webb's Normal Reader. No. 3, New York: Sheldon, Lamport, and Blakeman, 1856.

West, Michael., _A General Service List of English Words._ New York: Longmans, Green and Company, 1953.

Wolf, Willavene; King, Martha L.; and Huck, Charlotte S., "Teaching Critical Reading to Elementary School Children." _Reading Research Quarterly_, (Summer, 1968).

Velten, H. V., "The Growth of Phonemic and Lexical Patterns in Infant Language." _Language._ X, (1943), pp. 190-204.

Vygotsky, L. S., _Thought and Language._ Boston: Massachusetts Institute of Technology, 1940.

Whitehall, Harold, _The Structural Essentials of Written English._ (Second Edition) Bloomington, Indiana: Indiana University. 1951.

Whitehall, Harold, _Structural Essentials of English._ New York: Harcourt, Brace and Company, 1956.

"Why Can't They Understand," _Reading Newsreport._ III, (1969), pp. 32-33.

Young, F. M., "An Analysis of Certain Variables in a Developmental Study of Language." _Genetic Psychology Monographs._ (1941), pp. 3-141.

APPENDIX

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TABLE 2 CONJUNCTIONS

Fernald	Fries	Long	Strang	Whitehall	Mellon
also	and	and	and	and	moreover
although	also	but	or	but	also
and	nor	or	not	yet	furthermore
as	but	nor	but rather	as	besides
because	yet	both	sooner than	nor	in addition
both	then	not	as well as	or	nevertheless
but	therefore	either	nor	than	however
either	however	neither	because	for	although
ere	after	when	therefore	so	whereas
for	although	how	although	if	still
except	though	if	for	though	yet
forasmuch	as	after	nevertheless	while	accordingly
however	because	that	if	how	consequently
if	before	because	whether	that	thus
lest	for	therefore	after	what	hence
neither	how	nevertheless	before	when	therefore
nevertheless	if		since	where	
nor	like		so	which	
notwithstanding	provided		when	who	
or	since		whenever	why	
provided	so			else	
save	than			consequently	
seeing	that			hence	
since	unless			after	
so	until			because	
still	what			before	
than	when			provided	

TABLE 2 CONJUNCTIONS (CONTINUED)

Fernald	Fries	Robertson	Scmster	Whitehall	Fernald (Cont.)
that	where	although	and	providing	either-or
then	whether	because	but	since	if-then
therefore	which	if	for	supposing	neither-nor
though	while	so	or	unless	no-nor
till	who	that	nor	until	so-as
unless	why	when	yet	whence	such-as
until		where	so	whether	though-yet
when		that	either-or	whither	whether-or
whence		which	neither-nor	also	
where		who	both-and	furthermore	
whereas		and	not (only)	moreover	
whereat		but	but (also)	however	
whereby		for		nevertheless	
wherefore		yet		such as	
wherein		however		or else	
whereinsoever		thus		other than	
whereinto		"absent" that		otherwise	
whereof				and so	
whereto				so that	
whereupon				therefore	
wherever				although	
wherewith				for all	
whether				however	
while				in that	
whiter				so that	
why				whatever	
although-yet					
as-as					
as-so					
both-and					

TABLE 3 VOCABULARY AND FREQUENCY OF USAGE

List	West	Thorndike	Rinsland	Dolch	Spache	Dale
Conjunctions						
after	4491 (7% as conj)	1a	1527 (1a1)	*	Level I-II (2.7)	*
and	105,064	1a	28823 (1a1)	*	Level I-II (2.3)	*
as	23,646 (14% as conj)	1a	1634 (1a1)	*	Level III (2.3)	*
because	2703 (80% as conj)	1a	1367 (1a2)	*	Level V (3.3)	*
before	4021 (28% as conj)	1a	635 (1a2)	*	Level IV (3.4)	*
but	18,917	1a	3,245 (1a1)	*	Level I-II (2.4)	*
either	1166 (70% as conj)	1b	44 (2a)			*
for	25,951 (12.1% as conj)	1a	5337 (1a1)	*	Level I-II (2.4)	*

*Represents the word is included in this list.

Rinsland – 1a1 means the first one hundred of the first one thousand of the first 500 of the first one thousand
continues to 1a5.
1b1 means the first one hundred of the second five hundred of the first one thousand.

West – number represents frequency of occurrence in 5 Mill.

Thorndike – 1a represents in first 500 of 20,000 words. 2b represents second 500 of 20,000 words. 3a represents third 500 of 20,000 words.

TABLE 3   VOCABULARY AND FREQUENCY OF USAGE (CONTINUED)

List	West	Thorndike	Rinsland	Dolch	Spache	Dale
Conjunctions						
for	4063	1a	2953 (1a1)	*	Level III (2.6)	*
if	8046	1a	1580 (1a1)	*	Level IV (2.2)	*
neither...nor	1134 (68% as conj)	1b	21 (3a)			*
nor	1172	1b	24 (a2b)	*	Level VIII (4.1)	*
or	5667 (21% as conj)	1a	908 (1a1)	*	Level I-II (2.7)	*
otherwise	354 (39% as conj)	3a	4 (5b)			
since	1608 (34% as conj)	1a	114 (1b3)		Level VIII (4.3)	*
so	12350 (31% as conj)	1a	1580 (1a1)	*	Level I-II (3.1)	*
till-until	828 (65% as conj)	1a	226 (1a5)			
that	53794 (54% as conj)	1a	4881 (1a1)	*	Level I-II (2.3)	*
then	8138	1a	371 (1a3)	a	Level V (2.9)	*
though	2644	1a	92 (1b4)		Level VII (4.9)	
when	8044	1a	4130 (1a1)	*	Level III (2.4)	*

TABLE 3   VOCABULARY AND FREQUENCY OF USAGE (CONTINUED)

List	West	Thorndike	Pinsland	Dolch	Spache	Dale
Conjunctions						
where	3516 (11% as conj)	1a	774 (1a2)	*	Level I-II (2.3)	*
whether	1284	1b	25 (2b)			
which	17298 (0.6% as conj)	1a	675 (1a2)	*	Level IV (3.2)	*
yet	2,496 (62% as conj)	1a	218 (1a5)		Level VI-I (3.3)	*

TABLE 9

THE COMPREHENSION OF CONJUNCTIONS TEST
DISTRIBUTION OF TEST SCORES

Scores	Distribution of Scores
57-59	1
54-56	2
51-53	4
48-50	9
45-47	4
42-44	6
39-41	5
36-38	10
33-35	8
30-32	5
27-29	3
24-26	13
21-23	10
18-20	10
15-17	4
12-14	1
Total Subjects	95
Mean	33.12
Range	57-14

TABLE 10

CLOZE COMPREHENSION OF CONJUNCTIONS TEST
DISTRIBUTION OF TEST SCORES

Scores % Correct	Passage High Conjunctions	Passage Half Conjunctions	Passage No Conjunctions
84-89		1	1
80-83			2
76-79		4	3
72-75		1	8
68-71		3	14
64-67	1	4	6
59-63	6	26	24
56-58	6	8	4
52-55	5	6	2
48-51	5	12	5
44-47	14	8	4
40-43	12	3	1
36-39	6	3	1
32-35	6	4	1
28-31	13	2	2
24-27	3	2	2
20-23	7	2	5
16-19		1	2
12-15	1	1	5
8-11	2	0	0
4-7	4	3	1
0-3	4	1	2
Total Subjects	95	95	95
Mean	36.98	51.03	53.48
S.D.	16.07	16.02	20.47
Range	64-0	85-0	83-0

TABLE 11   142

THE PINTNER MENTAL ABILITY TEST
DISTRIBUTION OF TEST SCORES

Score	Distribution
149-152	2
143-148	2
138-142	4
132-137	2
126-131	4
120-125	11
114-119	14
108-113	9
102-107	11
96-101	11
90-95	11
84-89	6
78-83	6
72-77	0
66-71	2

Total subjects	95
Mean	108.85
S. D.	18.39
Range	154-67

TABLE 12   143

STANFORD READING ACHIEVEMENT TEST
DISTRIBUTION OF TEST SCORES

Scores	Distribution of Scores
94-97	1
90-93	0
86-89	0
82-85	0
78-81	0
74-77	2
70-73	2
66-69	3
62-65	1
58-61	9
54-57	7
50-53	13
46-49	12
42-45	7
38-41	5
34-37	6
30-33	9
26-29	11
22-25	5
18-21	2

Total Subjects	95
Mean	45.29
S. D.	1.56
Range	95-21

TABLE 13   144

THE COMPREHENSION OF CONJUNCTIONS TEST
ITEM ANALYSIS

Item	Discrimination Index	Difficulty Index	Total Correct
1	36.6	.379	62.1
2	29.3	.242	75.8
3	25.9	.084	91.6
4	29.5	.200	80.0
5	29.5	.126	87.4
6	55.6	.242	75.8
7	62.5	.368	63.2
8	32.9	.263	73.7
9	54.7	.484	51.6
10	4.4	.189	81.1
11	47.4	.463	53.7
12	8.3	.800	20.0
13	36.2	.411	58.9
14	58.7	.463	53.7
15	58.5	.495	50.5
16	40.7	.179	82.1
17	37.0	.168	83.2
18	50.9	.526	47.4
19	81.2	.558	44.2
20	47.6	.316	68.4
21	21.7	.211	78.9
22	27.8	.674	32.6
23	12.4	.737	26.3
24	51.0	.568	43.2
25	70.1	.432	58.8
26	77.4	.642	35.8
27	39.6	.621	37.9
28	43.7	.432	56.8
29	73.9	.379	62.1
30	47.3	.579	42.1
31	46.3	.684	31.6
32	40.2	.389	61.1
33	47.6	.421	57.9
34	55.0	.516	48.4
35	55.1	.379	62.1
36	62.5	.400	60.0
37	36.0	.368	63.2
38	43.6	.368	63.2
39	28.6	.358	64.2
40	47.2	.558	44.2
41	51.4	.389	61.1
42	27.8	.621	37.9
43	47.0	.432	56.8

TABLE 13 (CONTINUED)   145

THE COMPREHENSION OF CONJUNCTIONS TEST
ITEM ANALYSIS

Item	Discrimination Index	Difficulty Index	Total Correct
44	24.8	.421	57.9
45	81.5	.411	58.9
46	22.2	.916	8.4
47	31.6	.737	26.3
48	43.0	.726	27.4
49	-10.4	.768	23.2
50	54.6	.526	47.4
51	58.5	.537	46.3
52	55.0	.474	52.6
53	58.8	.432	56.8
54	12.1	.821	17.9
55	51.4	.379	62.1
56	62.7	.474	52.6
57	43.3	.537	46.3
58	31.3	.726	27.4
59	32.2	.547	45.3
60	62.7	.358	64.2
61	31.2	.737	26.3
62	43.0	.632	36.8
63	47.0	.589	41.1

CLOZE TEST

Spring is a happy time because winter is gone. Spring comes when

we _____given up. The robin _____yet snow is falling.

_____sun nor flowers are _____,but we smell spring.

_____days become sunny, though _____. The weather is

lovely _____it lasts. The flowers _____because it rains.

Flowers _____ and bloom. The flowers _____ bright as the

sun. _____ sing and build nests. _____ are happy for

spring. _____ and rain make the _____ green. This is

how _____ comes.

Now that spring _____ here, children would rather _____

than eat. That is _____ they stay outside. They _____

outside because it is _____. Neither boys nor girls _____

play inside. Children go _____ only if it rains. The _____

is gone so they _____ marbles. They play ball _____

they were sliding. Boys _____ play ball or fly _____.

This is how they _____. Girls jump rope, but _____ don't.

Girls play "jacks" _____ boys run.

Children play _____ spring, but mother works. _____

may go or stay. _____ mother works and works. _____

must mop since the _____ are dirty. The wood _____ dusted,

while the _____ are washed. Mother is _____ tired that

she must _____. The house is cleaner than before.

-1-

March winds bring kite flying time. Children like to fly _____.

K day is kite _____. Either boys or girls _____ fly kites.

They fly _____ that they have made. _____ town gives

children, string, _____, and paint. Sticks are _____ to

make the kites _____. Each child takes any _____ paper he

likes. It _____ be red, blue, green _____ yellow. Each

child makes _____ paints his kite. He _____ it the way

he _____ it. Each kite must _____ a very long string.

_____ the kites are finished, _____ is time to fly.

First, _____ children march. They march _____ a

field to fly _____. The children hold the _____ high

for everyone to _____. It is noisy when _____ march.

Everyone is happy.

_____ fly the kites, when _____ wind is just right.

_____ wind must not be _____ strong. Strong winds break

_____ strings. Each child runs _____ his kite will go

_____. Men and women watch _____ kites. Soon the air

_____ bright with kites. The _____ pulls them hard. One

_____ string breaks, and the _____ flies away. Another

kite _____ away. One big red _____ flies higher than the

_____. It is the winning _____. The kite race is _____.

The happy people go home, to wait for the next kite day.

Spring is baseball time. Boys like baseball. They _____

play baseball all day. _____ like baseball too. The _____

will not let them _____. They think baseball is _____

boys game.

The boys _____ their baseball mitts. They _____ a

bat. Then they _____ a ball. The boys _____ three bases.

Now, they _____ ready to play ball.

_____ batter is up. Then _____ pitcher throws the

ball. _____ batter strikes three times, _____ is out.

The next _____ is up. He strikes _____ times. The bat

finally _____ the ball. He runs _____ first base. A

player _____ the ball. The next _____ is up. He hits

_____ ball very hard. It _____ over the fence. Crash!

_____ ball hits Mrs. Smith's _____.

Mrs. Smith comes out. _____ is angry. The boys _____

they will pay for _____ window. Then she is _____ angry.

The game must _____. The boys have to _____.

They must pay Mrs. _____. The boys run errands. _____

girls like to help. _____, they can pay Mrs. _____.

The boys are happy. _____ play ball again. They _____

the girls play too. _____ is up. He hits _____ the ball.

This time he _____ not hit the ball _____. The ball

lands in _____ grass. The game can go on.

UNDERSTANDING CONJUNCTIONS TEST

Directions: Road each sentence. Draw a line under the answer that
tells the right meaning of the underlined word.

Example: The flower is red and yellow.
a. in addition
b. because
c. when
d. before

1. We will run and play.
a. but
b. besides
c. then
d. also

2. The girl laughed and laughed.
a. again
b. will laugh
c. as well as
d. but

3. One and one make two.
a. plus
b. but
c. when
d. again

4. We will eat and sing.
a. so
b. but
c. also
d. not sing

5. John cried, for he was sad.
a. because
b. else
c. either
d. with

6. It is neither big nor little.
a. except
b. not either
c. since
d. and

7. She went by, as I stood there
a. while
b. when
c. because
d. so

-1-

8. Ann laughed, _for_ she was happy.
    a. then
    b. when
    c. and
    d. because

9. _Neither_ John nor Mary is at home.
    a. no one
    b. either
    c. not either
    d. else

10. Adding two _and_ two makes four.
    a. also
    b. will make
    c. plus
    d. with

11. The candy is good _yet_ it is hard.
    a. also
    b. when
    c. still
    d. because

12. There was no place to go, _but_ home.
    a. besides
    b. other than
    c. than
    d. however

13. The music was lovely _while_ it lasted.
    a. since
    b. because
    c. when
    d. as long as

14. You may go _or_ stay.
    a. and
    b. a choice
    c. then
    d. but

15. He laughed, _but_ I did not.
    a. then
    b. yet
    c. so
    d. why

16. The dog is big _and_ brown.
    a. is brown
    b. in addition
    c. because
    d. if

17. She will sleep _and_ dream tonight.
      a. also
      b. because
      c. will dream
      d. again

18. The baby coughed _and_ coughed.
      a. in addition
      b. then
      c. again
      d. will cough

19. Susan went, _but_ I did not.
      a. because
      b. in addition
      c. yet
      d. when

20. Linda was so happy she could do nothing, _but_ laugh.
      a. and
      b. however
      c. than
      d. except

21. This car is big _as_ a truck.
      a. which is
      b. and
      c. so
      d. like

22. The dog will cover _or_ hide the bone.
      a. the same as
      b. in addition
      c. so
      d. and

23. You may write with pen _or_ pencil.
      a. other than
      b. then
      c. equally possible
      d. also

24. This house is taller _than_ theirs.
      a. as tall as
      b. not as tall
      c. compare things not equal
      d. less than

25. Jane ran farther _than_ Nancy.
      a. as far as
      b. far
      c. less than
      d. beyond.

26. She will stay home _if_ it rains.
    a. although
    b. because
    c. on condition that
    d. when it

27. He walked slowly, _so_ that he would not fall.
    a. because of
    b. therefore
    c. in order that
    d. so that

28. The day is sunny, _though_ cold.
    a. because
    b. although
    c. and
    d. unless

29. The table was dusty, _while_ mud was on the floor.
    a. at the same time
    b. therefore
    c. where
    d. as long as

30. She couldn't find out _how_ to drive the car.
    a. in addition
    b. way in which
    c. when
    d. the reason for

31. I am so tired _that_ I am unable to come.
    a. but
    b. and
    c. due to the fact
    d. for the purpose

32. She bought a red dress _when_ a blue one would have been better.
    a. since
    b. though
    c. would be
    d. and

33. Jane lives _where_ the weather is warm.
    a. due to the fact
    b. there
    c. when it is
    d. in a place

34. I don't know _why_ she is going.
    a. due to the fact
    b. whether
    c. if
    d. for what reason

-4-

35. She stayed home because she was ill.
    a. for the reason that
    b. therefore
    c. when
    d. in that way

36. They will either come or call.
    a. because
    b. due to the fact
    c. a choice
    d. if

37. Now that you"re home, why not stay?
    a. because
    b. since
    c. when
    d. therefore

38. Since it is snowing, you might as well stay.
    a. because
    b. when
    c. therefore
    d. still

39. She ate her dinner and went home.
    a. also
    b. before
    c. but
    d. then

40. We opened the box, but we were careful not to make any noise.
    a. and
    b. however
    c. also
    d. when

41. The meat is good, yet it could be better.
    a. then
    b. while
    c. and
    d. still

42. We could not help, but hear the noise.
    a. however
    b. a choice
    c. which
    d. do other than

43. I wonder if Ann will go?
    a. will
    b. for
    c. when
    d. whether

44. while I like the cake, it is dry.
      a. because
      b. although
      c. when
      d. since

45. She is coming home, though not to stay.
      a. then
      b. while
      c. however
      d. and will

46.. The world was different, when I was younger.
      a. since
      b. then
      c. because
      d. while

47. He moved to Florida, where it is warm.
      a. because
      b. due to the fact
      c. after that
      d. at which place

48. Be careful how you walk.
      a. how it is done
      b. way in which
      c. while
      d. when

49. Why did you go when you were tired?
      a. in spite of it
      b. while
      c. then
      d. since

50. I am happy because you came.
      a. the cause of
      b. when
      c. while
      d. for the reason that

51. Tell me how this happened.
      a. when
      b. in what way
      c. why
      d. how it

52. He is neither good nor bad.
      a. not so
      b. therefore
      c. not either
      d. either

53. You must either be quiet or go home.
   a. neither
   b. so
   c. a choice
   d. also

54. She agreed, so they went ahead with the plans.
   a. but
   b. for that reason
   c. and so
   d. in addition

55. She was nice and pretty.
   a. but
   b. as well as
   c. again
   d. was pretty

56. I have no pleasure, but reading.
   a. when
   b. other than
   c. before
   d. yet

57. I can do nothing, but with your help.
   a. because
   b. other than
   c. if
   d. unless

58. While we love the boy, he is bad.
   a. when
   b. due to the fact
   c. because
   d. at the same time

59. We had just eaten when the bell rang.
   a. then
   b. after which
   c. at the time
   d. as

60. We must stop since it is raining.
   a. but
   b. though
   c. when
   d. because

61. It stopped raining, so we went home.
   a. then
   b. but
   c. for that reason
   d. also

62. I went to the mountains, <u>where</u> it is cold.
  a. because
  b. at which place
  c. when
  d. due to the fact

63. The baby was happy, <u>while</u> she was here.
  a. because
  b. although
  c. when
  d. during the time that