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How Stated Purposes for Reading Affect Reading Comprehension Scores of Fifth Grade Students in a Midwestern Suburban School District

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HOW STATED PURPOSES FOR READING AFFECT READING COMPREHENSION SCORES OF FIFTH GRADE STUDENTS IN A MIDWESTERN SUBURBAN SCHOOL DISTRICT

by

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Signature Larry M Brady

Date May, 1974

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ABSTRACT

The Problem

The purpose of this investigation was to study the performance of fifth grade students on reading comprehension under two conditions: (1) when stated purposes for reading were provided prior to reading, and (2) when stated purposes were not provided prior to reading. A second purpose of the investigation was to determine whether the effect of providing purposes for reading is different at various cognitive levels.

The Procedure

The sample for this investigation was comprised of students enrolled in the thirty-two fifth grade classrooms of Independent School District #191, Burnsville, Minnesota. The subjects were assigned by classroom unit to the experimental or control group by a random selection process. The 797 subjects included in this investigation were assigned as follows: 415 in the experimental group and 382 in the control group.

The test instruments designed for use in this study were administered to all subjects at 9:00 a.m. on May 3, 1973. The Reading Comprehension Test from the SRA Achievement Series was employed in two different formats in this investigation. The Regular Edition was reproduced in a format very similar to its original form. The Modified Edition was reproduced with the inclusion of stated purposes for reading prior to each of the six reading selections in the test. The

Modified Edition was administered to the experimental group, and the Regular Edition was administered to the control group. The test administration was performed by the subjects' regular classroom teacher according to a script provided by the investigator. All subjects were allowed up to 60 minutes to complete the 60 item test.

The testing procedure provided a total reading comprehension score for each subject. Sub-test scores for the following levels of comprehension were derived: Story Context, Re-state Material, Sequence and Summarize, Draw Inferences, Apply to New Situations and Logical Relationships. The test instruments also yielded scores for the social studies-type comprehension questions and science-type comprehension questions.

The analysis of the data involved the use of a one-way analysis of variance. To test the eleven sets of null hypotheses, comparisons were made of the mean scores achieved by the subjects in the two groups. The comparisons included performance of each group on the total comprehension test, on each of the levels of comprehension, on the social studies and science-type comprehension scores, and on the performance of each group when stratified into high, middle and low groups by past achievement scores and by non-verbal I.Q. scores.

Conclusions

This investigation has provided evidence which supports the following conclusions, subject to the limitations of the investigation:

1. Providing students with stated purposes for reading does not improve their comprehension of material read. The findings indicate that the subjects who read without stated purposes and those who

had stated purposes provided performed equally well on a test of reading comprehension.

2. Providing stated purposes for reading does not appear to be an effective strategy at any of the six levels of comprehension. The experimental and the control group subjects achieved comparable scores on each of the six sub-scales.

3. Providing stated purposes for reading was not of special assistance to students in any of the high, middle or low achievement or ability groups. The subjects in the control group scored as high in all of those comparisons, and in one case, they scored significantly higher than the experimental group.

4. Providing stated purposes for reading does not increase the achievement level of students on social studies or science-type comprehension material. The subjects in both the control and the experimental groups scored equally well on those two sub-tests.

CHAPTER I

STATEMENT OF THE PROBLEM

Purpose of the Study

The purpose of this investigation is to study the performance of fifth grade students on reading comprehension tasks under two conditions: (1) when stated purposes for reading are provided prior to reading, and (2) when stated purposes are not provided prior to reading. A second purpose of the investigation is to determine whether the effect of providing purposes for reading is different at various cognitive levels.

Significance of the Study

The term, reading comprehension, is the label generally given to describe the acquisition of meaning from reading. The term was first used by Gray in the 1920's. He used the term primarily in reaction to what he considered to be an undue emphasis upon oral reading in U.S. schools. Prior to Gray's time the primary goal of reading instruction had been the proper pronunciation of words, with heavy emphasis given to eloquence and dramatic interpretation (Harris and Smith, 1972).

There is little disagreement today among reading authorities that gaining meaning is the primary goal of reading and should therefore be the major focus of reading instruction. Although the authorities agree that instruction for improved reading comprehension is vital, they do not agree on the definition of comprehension nor on the hierarchy of thinking skills involved for the learner. Nila Banton

Smith states, "Comprehension is just a big, blanket term that covers a whole area of thought-getting processes in reading" (Smith, 1963, p. 257). Helen K. Smith provides a list of twelve component skills which range from "grasping directly stated facts and details" to "making evaluations" (Smith, 1966, p. 51). There appears to be agreement that students need wide experience in using the full spectrum of comprehension skills to grow to maturity as readers. Thomas and Robinson (1972) suggest that teachers are strong determiners of the level of reading comprehension used by their students through the directions they provide and the questions they pose to students.

It is a common practice in elementary school classrooms to provide stated purposes for reading to guide and to improve the comprehension of young readers. The authors of most basal reading series designed for use by elementary-age students not only recommend that classroom teachers use this teaching technique in guided reading activities, they include reading for stated purposes as an integral part of their skills program.

In view of this widespread use, it would seem reasonable to expect that there would be conclusive evidence available in the literature to support the practice of providing stated purposes for the guidance and direction of student's reading. The research, however, appears to be limited to a few studies conducted in the 1960's. The results of those studies were inconclusive as to the effect stated purposes for reading actually have on the reading comprehension scores of the samples studied. A study conducted by Frase (1968) concluded that guiding questions were of considerable assistance to students. The investigation performed by Goudey (1968), however, found that

providing questions for students to read prior to their reading a selection resulted in students scoring at a level lower than that of the control group which had read the same selections but without questions provided to guide their reading.

While evidence on whether purposes for reading positively influence reading comprehension is inconclusive, no research has been conducted to determine whether the effect may vary at various levels of the cognitive domain. It is possible, for example, that reading purposes which focus on recall of detail interfere with comprehension, but that purposes relating to critical reading facilitate pupil performance on comprehension tasks. Evidence is needed to provide guidance to teachers, publishers of instructional materials, and reading researchers on the matter of providing purposes for reading.

This investigation seeks to determine not only what effect providing stated purposes for reading has on the reading comprehension of fifth grade students, but also to determine the effect of those stated purposes on six defined levels of comprehension. This investigation should provide additional knowledge regarding the importance of providing stated purposes for reading as a means of improving a student's ability to score more correct responses on a general reading comprehension test. It should also provide knowledge of the effect of stated purposes on the student's ability to score a greater number of correct responses on one or more of the six defined levels of reading comprehension.

Definitions

The following terms used throughout the report should be clarified at this point:

Reading Comprehension.--The act or process of the reader grasping knowledge or understanding from the printed word. Reading comprehension is usually referred to in the elementary school as knowing and understanding what has been read.

Stated Purposes for Reading.--A brief statement which has been inserted within a bold lined box prior to each of the six reading selections in the Modified Edition of the Reading Comprehension Test. The statements are intended to provide purpose for reading each of the six selections contained in the test.

Control Group.--Students who were randomly assigned by classroom to take the Regular Edition of the Reading Comprehension Test.

Experimental Group.--Students who were randomly assigned by classroom to take the Modified Edition of the Reading Comprehension Test.

Regular Edition.--The unaltered form of the Reading Comprehension Test as reproduced by a photo-offset process from the SRA ASSESSMENT SURVEY, Form E/Blue Level (see Appendix C, page 120).

Modified Edition.--The altered form of the reading comprehension test which includes the states purposes for reading prior to each of the six reading selections. This form is identical to the Regular Edition in size, format and paper used (see Appendix E, page 141).

Limitations

The students included in this study came from the eight elementary schools of Independent School District #191, Burnsville, Minnesota. This school district serves the population in the Minneapolis suburbs of Eagen, Burnsville and Savage. Conclusions based on the findings of this study are not necessarily applicable to students of other geographic areas.

A second limitation of this investigation concerns the test instruments which were used to solicit student responses. Although there is information available regarding the means by which the regular form of the Reading Comprehension Test was standardized, similar information is not available regarding the test instruments designed for this study.

The six levels of reading comprehension, as defined by the authors of the test, may serve as a third limitation. It would be possible to sub-divide the skills of reading comprehension into more and different levels. Conclusions regarding this aspect of the study will necessarily be limited to the six levels of reading comprehension as defined for this investigation: (1) Determining word meaning through contextual clues, (2) restating material and selecting specific detail, (3) placing ideas or action in proper sequence and summarizing activities, (4) drawing inferences from material read, (5) making application of information read to new situations, and (6) determining logical relationships without reading selections.

This investigation is limited to a testing situation. Findings may not apply to a regular classroom instructional setting. It would be hazardous to project the findings of this study directly to the elementary classroom without further refinement and study.

Scope of the Study

This investigation is designed to seek answers to the following questions:

1. Does the practice of providing stated purposes for reading improve a student's ability to comprehend what he has read?

2. Does the provision of stated purposes for reading improve a student's ability to understand and use knowledge at different levels of comprehension?

Answers to several additional questions are expected to be implicit in the findings relative to the major purposes of this investigation. Those questions include the following:

3. Do stated purpcses for reading improve a student's ability to understand and use knowledge in the content areas of social studies and science?
4. Do stated purposes for reading affect the responses of the low, middle and high scholastic ability students differently?
5. Do stated purposes for reading have a positive effect on the responses of low, middle or high level achievers in the area of reading comprehension?

Summary

The significance of the investigation has been discussed in terms of the answers it may provide to the questions of the degree of productivity in the guiding of a student's reading. It also seeks to determine the effect guiding a student's reading has on his ability to understand and use knowledge at six levels of comprehension.

The terms used throughout the report have been defined, the limitations of the study discussed and the scope of the study reported in this chapter.

CHAPTER II

REVIEW OF THE LITERATURE

This study was designed to measure the effects of providing stated purposes for reading on the comprehension scores of fifth grade students in a midwestern suburban school district. A second intent of this study was to measure the effects of providing stated purposes for reading on six defined levels of reading comprehension.

This chapter contains a review of the literature which is relevant to the study. The chapter has been organized into four main sections with subsections as follows:

I. Literature Related to Reading Comprehension and Thinking
   - A. The Reading Process
   - B. Levels of Thinking and Reading Comprehension

II. Expert Opinion Regarding Directing Reading Through Stated Purposes

III. Research Studies on Directing Reading Through Stated Purposes
   - A. Studies Supporting the Value of Stated Purposes for Reading
   - B. Studies Not Supporting the Value of Stated Purposes for Reading

IV. Summary of the Review of the Literature

The professional literature related to the reading processes is abundant. Many authors have expressed their opinions as to the components of the reading act. A great majority of these authors state their belief that the processes involved in reading and the thinking processes are very closely related. A number of studies have been done to

investigate this relationship. Section I reports the literature regarding the reading-thinking processes.

Sections II and III of this review will report on both the opinions of reading authorities and on the studies which have been done on directing reading through stated purposes for reading. The literature in these sections has as its central intent to summarize available knowledge on the effect stated purposes have on reading comprehension.

A summary of the literature on providing stated purposes for reading and the effects on reading comprehension is provided in Section IV.

Literature Related to Reading and Thinking

The literature on the reading and thinking processes provides many theories to explain what transpires in the mind of the reader. These points of view serve as the skeletons around which reading authorities, publishers and teachers design reading programs and instructional materials. These statements of belief likewise serve as the stimulus for the formation of hypotheses to be tested by researchers.

Although literally thousands of articles, books and reports have been devoted to various aspects of the reading and thinking processes, it is the intent of this review to report only on those which seemed to provide significant knowledge on these processes and, most specifically, the role reading comprehension plays within those processes. This section contains both expert opinion and research investigations.

The Reading Process

Reading, or the reading process, is difficult to define because so little of what is involved in a highly complex process is observable.

Durkin (1970) makes the observation that the most difficult terms to define are those found in everyday conversation. Technical terms tend to have precise meanings; common everyday terms, on the other hand, seem almost arbitrary, and one must struggle to define them. The term "reading" falls into the latter category. A person can see a student select a book, watch his eyes move, count the pages he turns, observe facial expressions, and ask him to explain what he has read. The student might also be asked to read aloud so that one could hear him attack the words.. Having observed all of the preceding, however, it is still difficult to explain what has transpired in the mind of the reader.

Educators and psychologists began applying scientific investigation to the reading processes in the late 1800's. The history of reading prior to this period provides little to explain what happens within the reader during the reading act. That early history does describe "the how and the why" reading was taught. The first known published reading research in either the United States or England took place in 1884. Between 1884 and 1910 there were thirty-four studies recorded--all of them of a psychological or physiological nature. The interest in reading research was accelerated sharply in the next few years as indicated by the 436 accounts of reading studies during the 1910-1924 period. As the interest in research increased; the areas studied broadened to include: silent reading, speed, classification of pupils, phonics, methods in the primary grades, appropriate materials, hygiene of reading, uses of reading in school and adult life. Although there have been brief periods during which very little research of reading has been reported, both the number and the quality of the investigation has continued to grow in recent years (Smith, 1965).

The research which has been conducted in the past ninety years has resulted in the construct of a variety of "reading models" which both attempt to explain what occurs during the reading process and to divide the process into discernable parts which can be measured. Geyer (1972) presented a review of 48 models of the reading process or of processes related to reading. Included in his review was the highly complex Substrata-Factor Theory of Reading which had been developed by Holmes over a 20 year period of study. At the base of this model lay the substra-factors, thought of as:

> . . . neurological subsystems of brain cell-assemblies, containing various levels of information; such as, memories for shapes, sounds, and meanings of words and word parts, as well as memories for vicarious and experimental material, conceptualizations, and meaningful relationships stored as substantive verbal units in phases, idioms, sentences, etc. (Holmes, 1970, p. 188).

To test his theory, Holmes employed as the statistical model an extention of the Wherry-Dolittle test-selection procedure which has created considerable controversy among reading researchers. He reported that the substrata factors could be flexibly combined into "working systems," thereby bringing together diverse information learned at various times and under different circumstances to the immediate task of the reader. Little credence is given to this model by some specialists (Davis, 1971).

A second model, developed by Goodman, suggests that reading is something quite different from what Holmes claimed. Goodman designed and tested a model which is based on the premise that reading is not the precise, detailed, sequential perception of letters, words and large language units that it is commonly held to be. Rather, he says reading is a selective process which:

> . . . involves partial use of available minimal language cues selected from perceptual input on the basis of the readers expectations. As this partial information is processed, tentative decisions are made to be confirmed, rejected, or refined as reading progresses (Goodman, 1970, p. 260).

Goodman views reading as a "psycho-linguistic guessing game."

At the conclusion of his review of reading models, Geyer (1972, p. 583) issued the following cautions regarding their use:

> It seems clear that the application to normal reading of most of the models presented is still some way off. Most of the models have been developed under highly controlled laboratory conditions, and care should be exercised in extending their implementation beyond these conditions.
> . . . one fact heavily underlined by the models presented is, therefore, the very complex nature of the normal reading process. Given this complexity, the problem associated with reading instruction are not likely to be solved by simplistic, now-oriented approaches. As E. B. Huey wrote in 1907: " . . . and reading itself, as a psycho-physiological process, is almost as good as a miracle. . . . Problem enough, this, for a life's work, to learn to read!"

Mortimer Adler's How to Read a Book provides a discussion of the close association between the reading process and the process of thinking. Adler (1940, p. 43) states:

> The art of reading, in short, includes all the same skills that are involved in the art of discovery: keenness of observation, readily available memory, range of imagination, and, of course, a reason trained in analysis and reflection. . . . To whatever extent it is true that reading is learning, it is also true that reading is thinking.

There is considerable support in the literature for Adler's point of view. Stauffer has incorporated this view into his recommendations to the teachers of young readers. In his book, Teaching Reading As a Thinking Process, Stauffer (1969b, p. 15) argues:

> . . . if you agree that muddled thinking ends in bungled doing and that to think clearly is useful for the sake of achieving even our most practical aims, if you agree that muddled reading ends in bungled verbalisms, if you agree that reading meaningfully is useful for achieving even our most practical day-to-day needs, then we agree that reading should be taught as a thinking process.

The reading process includes activities on the part of the reader which during early times, and to the casual observer of today, cause reading to appear very mechanical. It may be true that as a reader gains maturity, many of the word attack skills do become almost automatic or mechanical. An example of those skills are eye movements and left-to-right progression. But, as Gates (1949, p. 3) points out, reading includes much more:

> Reading is not a simple mechanical skill; nor is it a narrow scholastic tool. Properly cultivated, it is essentially a thoughtful process. However, to say that reading is a "thought-getting" process is to give it too restricted a description. It should be developed as a complex organization of patterns of higher mental processes. It can and should embrace all types of thinking, evaluating, judging, imagining, reasoning, and problem-solving. Indeed, it is believed that reading is one of the best media for cultivating many techniques of thinking and imagining.

Gates (1949, p. 4) goes on to say that the reader "does more than understand and contemplate; his emotions are stirred; his attitudes and purposes are modified; indeed, his innermost being is involved."

Harris and Smith (1972, p. 8) advance the proposition that "reading is a process of communication between the writer and the reader. Hopefully the reader receives from the communication all that the writer intended." These authors suggest the reading process starts with word recognition and proceeds until a body of knowledge is synthesized and used according to the purposes of the reader. They provide a model (Figure 1) to indicate what the reader does with the written message to make it a complete communication.

Through the Harris-Smith model one can focus on the specific parts of the reading act. Even though in reality each of the operations illustrated by the model tend to mesh with the next operation,

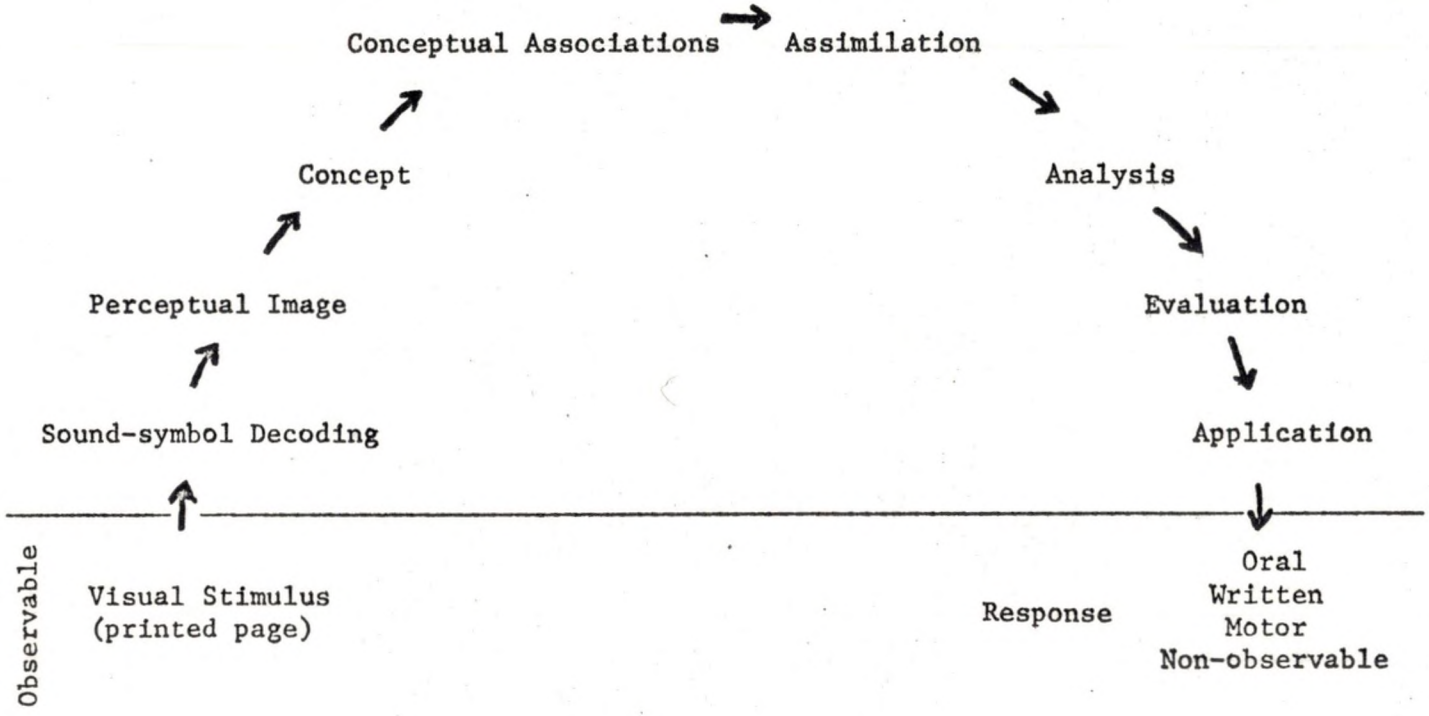

Fig. 1.--The Reading Model (Harris and Smith, 1972)

it is helpful to attempt to measure and to evaluate each of the operations. The authors provide their readers a series of suggestions for the diagnosis of a student's ability to perform at any of the operational stages (Harris and Smith, 1972).

Levels of Thinking and Reading

The suggestion that reading and thinking are closely linked was made earlier in this chapter. Another factor, background experience, provides the necessary material for the mind to manipulate during the thinking process. A third ability, language skills, is also considered vital to the thinking process as one must be able to attach labels to the objects about which he thinks. Intelligence is seen by Harris and Smith (1972) as the fourth factor which is essential for thinking.

Although, as Russell (1965, p. 370) states, "American psychologists in general have been wary at studies of mental life," some definitive works on the subject are available. This section reports some of those works along with some of the opinions experts have shared regarding thinking and reading.

The first major experimental study of reading as a thought-getting or thinking process was published by Thorndike (1917a, b, c). Thorndike analyzed the errors made by elementary-school students in writing the answers to simple questions based on short paragraphs. The pupils were given unlimited time and allowed to refer to the paragraghs as often as they wished. Thorndike found that even when the pupils understood the meanings of individual words in a paragraph, many of them made errors in answering questions about those paragraphs. The nature of the errors made led him to believe that

the pupils were unable to use relational words and phrases (such as but and on the contrary) to fit together to the separate ideas expressed or given the individual words or phrases the proper amount of emphasis with respect to one another.

Davis (1967), in a review of Thorndike's work, said that Thorndike saw comprehension in reading to be much the same as reasoning in mathematics. Comprehending a printed paragraph was thought to involve selecting the right elements of the situation and placing them together in the right relationship with the right amount of weight, influence, or force for each. Davis cites the following quotation from Thorndike (1917a, p. 114) to support his analysis:

> Understanding a . . . printed paragraph is then a matter of habits, corrections, mental bonds, but these have to be selected from so many others, and given weights so delicately, and used together in so elaborate an organization that "to read" means "to think" as truly as does "to evaluate" or "to invent" or "to demonstrate" or "to verify."

Dewey (1935) studied the relation between the ability to obtain facts and to carry out inferential thinking in historical material. He found product-moment correlation coefficients between those two variables ranging from .38 to .65. He concluded that it should not be assumed that tests which measure skills in obtaining facts adequately measure understanding. Understanding evidently was comprised of more than obtaining facts.

Davis (1941) conducted the first factor-analytic investigation of comprehension using tests especially constructed to measure the mental skills used in reading. He reported that following a review of all the skills the experts of his time thought to be included in comprehension, he designed a test to measure nine basic skills. The skills he tested with a sample comprised of 421 college freshmen were:

1. Recalling word meanings
2. Drawing inferences about the meanings of words from content
3. Following the structure of a passage
4. Formulating the main thought of a passage
5. Finding answers to questions answered explicitly or merely in paraphrase of the content
6. Weaving together ideas in content
7. Drawing inferences from the content
8. Identifying a writer's techniques, literary devices, tone and mood
9. Recognizing a writer's purpose, intent, and point of view (Davis, 1968, p. 504).

Davis (1968) reported two major weaknesses in his study. The first was the wide variation in the reliability coefficients--from .17 for Skill 4 to .90 for Skill 1. The second weakness was that several items, often testing different skills, were based on the same reading passage. He performed a second study in 1966 with 400 twelfth grade students to eliminate the imperfections in the 1941 study. In the second study, Davis appears to have combined Skills 1 and 2 from his original list of 9 skills and reduced the list of mental skills to be measured to 8. Following the second study, Davis (1968, p. 542) concluded:

> Comprehension among mature readers is not a unitary mental skill or operation. The data summarized . . . leave no doubt that substantial parts of the mental abilities used in eight skills judged to be of importance in comprehension are independent of one another.

Davis (1968b, p. 543) follows his conclusions with a recommendation to educators:

> The implication of these conclusions for teaching reading after the establishment of basic mechanical skills is clear. Systematic and carefully planned learning exercises that are appropriate in level of difficulty for each pupil should be provided throughout the secondary grades.

Alshan (1964) conducted a study measuring five mental skills used in reading to determine if they were independent of one another. His study failed to confirm the hypothesis that the skills were

independent of one another. Alshan recognized potential weaknesses in his study which could have affected the results. Davis (1967) was aware of the potential imperfections in the Alshan (1964) study and attempted to eliminate them in his study. As reported earlier, Davis did have evidence to support his conclusions that there are separate, unique mental skills required to comprehend written material.

Davis (1971) states that many writers have presented analyses of the processes or skills thought to be involved in reading comprehension. Much of the writing has been based on little, if any, experimental data. He refers to this type of writing as an "armchair analysis of comprehension." He did concede that this type of writing follows many years of teaching and observation of readers and, therefore, is of value.

An analyses of comprehension skills was published in the Eighteenth Yearbook of the National Society for the Study of Education by Gray (1919). The eight comprehension skills listed were:

1. To read for the purpose of giving a coherent reproduction;
2. To determine the central thought or the most important idea of a selection;
3. To select a series of closely related points and their supporting details;
4. To secure information which will aid in the solution of a problem or in answering questions;
5. To gain a clear comprehension of the essential conditions of a problem;
6. To discover new problems in regard to a topic;
7. To determine the lines of argument which support the point of view of the author;
8. To determine the validity of statements.

In the Taxonomy of Educational Objectives, Handbook 1: Cognitive Domain, a classification scheme is provided which is designed to cover the intended behavior of students--the ways in which individuals tend to act or think as the result of instruction in the cognitive

area. These behaviors include: remembering, reasoning problem solving, concept formation, and creative thinking (Bloom et al., 1956).

Harris and Smith (1972, p. 246) listed Sander's adaption of Bloom's Taxonomy as it relates to the thinking processes:

1. Memory: The pupil recalls or recognizes information.
2. Translation: The pupil changes information into a different form or language.
3. Interpretation: The pupil discovers relations among facts, generalizations, definitions, values, and skills.
4. Application: The pupil solves a lifelike problem that requires the identification of the issue and the selection and use of appropriate generalizations and skills.
5. Analysis: The pupil solves a problem through his conscious knowledge of the parts of thinking.
6. Synthesis: The pupil solves a problem that requires original, creative thinking.
7. Evaluation: The pupil makes a judgment of good or bad, or right or wrong, according to designated standards.

Spache (1962, p. 67) developed a theoretical model to describe the operation of the basic intellectual processes in the act of reading. He listed these processes:

1. Cognition - recognition of information
2. Memory - retention of information
3. Divergent Production - logical, creative ideas
4. Convergent Production - conclusions, inductive thinking
5. Evaluation - critical thinking

Cleland (1968, pp. 18-19) proposed a model which he believed explained the intellectual processes which were employed either by a reader or a listener. As a person reads or listens, he suggests that the person acquires an insight or a Gestalt of the concepts that are portrayed by the language of the writer or the speaker. When this acquisition takes place, he believes the person uses the following intellectual processes: "(1) Perception, (2) Appreciation, (3) Abstraction, (4) Appraisal, (5) Ideation, (6) Application."

Durkin (1970) provides a rather extensive list of skills which she says fall under the umbrella of reading comprehension. She credits

Thomas C. Barrett as being the author of these Cognitive and Affective Dimensions of Reading Comprehension:

Literal Comprehension
- Recognition of
  - details
  - main ideas
  - sequence
  - comparison
  - cause and effect relationships
  - character traits
- Recall of
  - details
  - main ideas
  - sequence
  - comparisons
  - cause and effect relationships
  - character traits
- Reorganization of Ideas or Information Explicitly Stated
  - Classifying
  - Outlining
  - Summarizing
  - Synthesizing
- Inferential Comprehension
  - Inferring details
  - Inferring main ideas
  - Inferring sequence
  - Inferring comparisons
  - Inferring cause and effect relationships
  - Inferring character traits
  - Predicting outcomes
  - Interpreting figurative language
- Evaluation or Judgements about
  - Reality or fantasy
  - Fact or opinion
  - Adequacy and validity
  - Appropriateness
  - Worth, desirability and acceptability
- Appreciation
  - Emotional response to the content
  - Identification with characters or incidents
  - Reactions to the author's use of language
  - Reactions to the author's word pictures (Durkin, 1970, pp. 367-368).

Harris and Smith (1972, p. 242) have provided a model of reading comprehension which serves to illustrate the major components in comprehension (Figure 2).

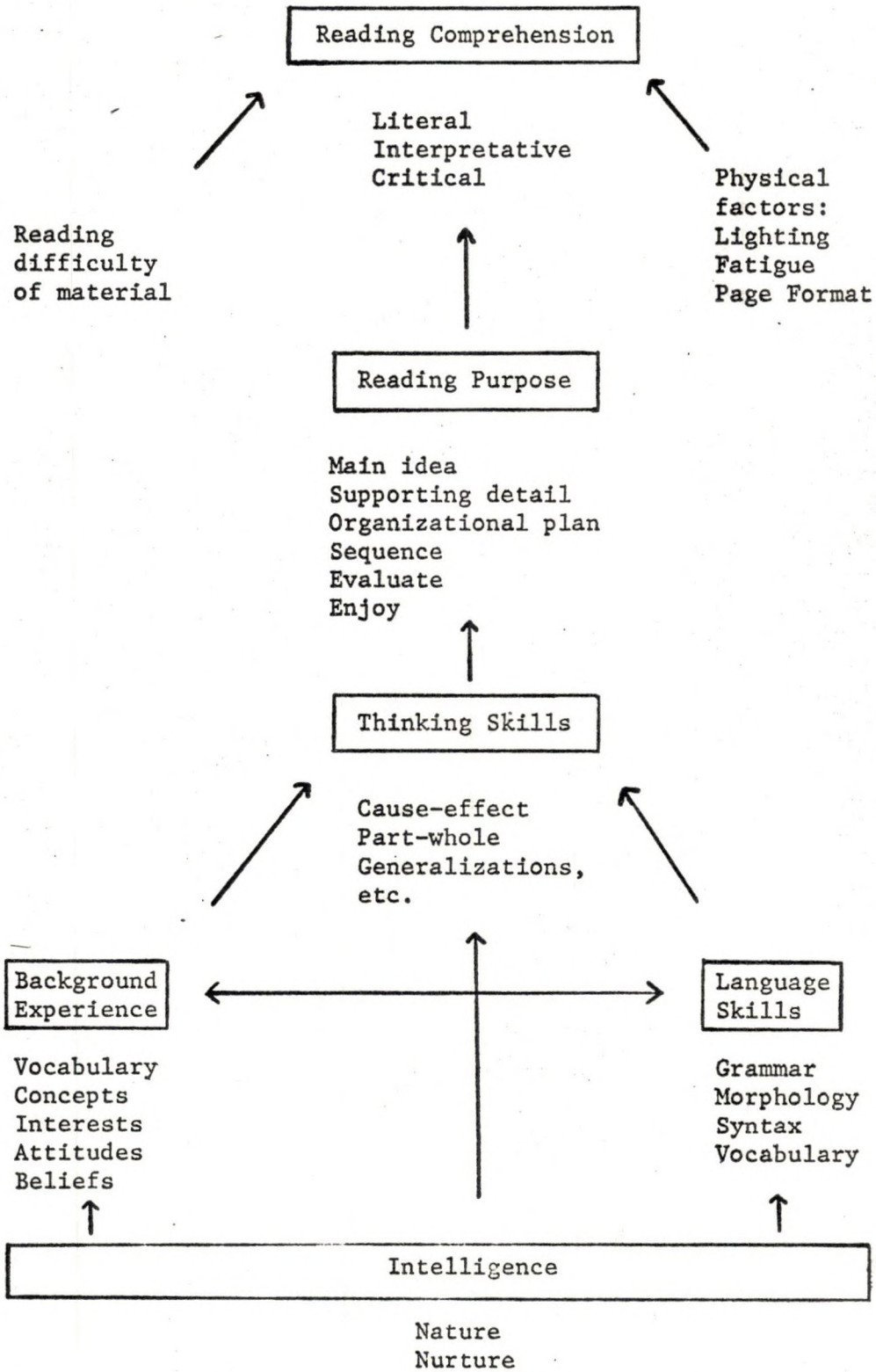

Fig. 2.--A Reading Comprehension Model (Harris and Smith, 1972).

Harris and Smith (1972, p. 241) caution the reader that their model of reading comprehension is " . . . an oversimplification of a highly complex process and consequently contains some error." It does, however, enable the viewer to become more specific in discussing comprehension. They point out:

> . . . four factors are listed as the primary determinants of reading comprehension: thinking skills, background experience, language skills, and intelligence. The reader must possess these attributes in order to comprehend. Purposes for reading act as controlling agents to direct the reader's application of the skills and abilities necessary for comprehension to take place. External factors such as the reader's physical well-being and the difficulty of the reading material also effect comprehension (Harris and Smith, 1972, pp. 242-243).

The literature cited here regarding reading comprehension is by no means all inclusive. The studies and opinions reported here were those dealing most closely with the topic being studied. For a more exhaustive review of literature on reading comprehension, the reader is referred to Davis (1971).

Expert Opinion Regarding Directing Reading Through Stated Purposes

The classroom practice of directing a student's reading by establishing purposes for reading has been recommended by many reading authorities. This section is devoted to reporting the literature which advances the theory that stated purposes for reading are of assistance to students.

Betts (1944) applied the name, Directed Reading Activity (DRA), to the procedure which he found in most of the teacher's manuals of the basic reading series. He suggested that the procedure be used by teachers since it had been experimentally appraised and time-tested. The four-part DRA included the following activities: (1) preparation

for the story, (2) presentation of new words, (3) guided reading and interpreting the story, and (4) follow-up activities. This procedure has been widely applied in the basal readers used in about 90 percent of the elementary schools in the United States (1967).

Stauffer (1969a) developed a different type of directed reading procedure which he included in the publication of a major basal reading series. He outlined a five-step procedure in what he termed the Directed Reading-Thinking Activity (DR-TA). He recommended the following steps in a reading group setting: (1) identification of purposes for reading, (2) adjustment of rate of reading to the purposes declared and to the nature and difficulty of the material, (3) observation of the reading, (4) development of comprehension, and (5) fundamental skill training activities, discussion, further reading, additional study and/or writing.

The development of purposes as the very first step in the reading processes is viewed by Stauffer as essential. His reasons for establishing purposes first are:

> . . . purposes or questions or set represent the directional and motivating influences that get a reader started, keep him on course, and produce the vigor and potency and push to carry him through to the end (Stauffer, 1969b, p. 43).

Durkin (1970, p. 370) views comprehension as "the fulfillment of a particular purpose through the use of appropriate material which is read in a particular way." Purpose in relation to reading can be conceived of in two ways, according to Durkin. When the purpose has to do with a reason for reading, it is thought of as a motivational purpose. Once a motivational purpose comes into existence, another type of purpose becomes apparent. That second purpose has to do with what is required from the reading in order to achieve the first or motivational purpose.

The teacher is viewed by most of the authorities as the central person in the classroom for the establishment of assignments, directions for study and purposes for reading. The teacher, through his or her diagnosis of needed skill development, selects the material to be read and, quite often, the reasons for reading it through the questions posed. Durkin (1970, p. 375) recommends a "best time" to state a challenge for students:

> Once the relationship between different types of questions (and assignments) and different types of comprehension is seen, then it follows that questions about written material ought to be posed before the children read it. Sometimes, depending both on the content and the children, some of these can be questions which the children themselves have raised; many more times they will be a teacher's questions.

Smith (1967) refers to motivational purposes as the "primary or life purposes" for reading. Included in her list of motivational purposes are: enjoyment, intellectual demands, utilitarian purposes, socio-economic demands, vocational or avocational interests, personal and social needs, problem-solving, and spiritual or religious needs--personal stimulation. She makes the point that the number of motivational needs is not as important as the effect these purposes had on clear comprehension. A student's comprehension skills can be improved by appealing to the primary or life purposes. It is thought that these same primary or life purposes could serve to interfere with the attainment of desired skills if they become so powerful that they cause the student to read for his own purpose rather than for the one determined by the teacher.

Anderson (1960) states that the function of all reading is to satisfy some purpose, or to solve some problem which necessitates the use of reading. He concludes: " . . . it would seem obvious that the

development of reading skills which lead to that end must form a basic element in any reading program" (Anderson, 1960, p. 206). The placement of the challenge to the student also appears to be an important consideration as he argues:

> If the selection of the skills required is based on the purpose, it follows that the purpose must be clear to the reader before he begins to read. This implies that most directions and comprehension checks should be placed at the beginning of the passage to be read, and the reader should be instructed to read them first (Anderson, 1960, p. 206).

Thomas and Robinson (1972) go into considerable detail in recommending questionning techniques which will assist students in the establishment of clear purposes for reading. They make a distinction between the manner in which a teacher provides students with purpose-questions and the way in which the teacher helps students to formulate their own purpose-questions. The authors acknowledge that during the early years in a student's schooling most of the purposes for reading are established by the teacher. Gradually, however, students should become more and more independent of teacher-given purposes and should read more often to satisfy important purposes of their own. It was mentioned that the use of teacher-directed purposes continue to serve a valuable function throughout college and in graduate school.

The literature seems to support the theory that purpose must precede the reading of the printed page. There are a variety of opinions on how much teacher direction is necessary to achieve the desired goal--thorough comprehension. Harris and Smith (1972, p. 267) provide a suggestion regarding purposes for reading:

> Since there are so many purposes for reading, it is more accurate to speak of comprehension for a specific purpose than simply comprehending. The teacher's task is to help children understand when different purposes are most appropriate and how to adjust reading behavior according to different purposes.

There seems to be agreement that the teacher must be the one person within the classroom who is familiar with the broad range of thinking-reading skills. The teacher must likewise know the individual needs prior to selecting reading materials that lend particularly well to the development of a specific type or level of comprehension skill. The teacher must "vary the assigned purpose in order to provide practice in all types of reading" (Harris and Smith, 1972, p. 269).

The literature on purposes for reading, purposeful reading and questioning techniques is quite extensive. The literature reported here was selected because of relation between purposes and reading comprehension. For additional information on reading purposes, the reader is referred to Frase, 1968; Rothkopf, 1966; Smith, H. K., 1967, Weaver and Kingston, 1967; Thomas and Robinson, 1972; Berlyne, 1966.

Research Studies on Directing Reading Through Stated Purposes

Although the literature generally supports the practice of establishing a purpose before reading, comparatively few studies have been reported of attempts to substantiate this procedure. Of the studies that were reported, it was found that some do support the procedure, some lend partial support, while other studies were unable to provide any evidence that the procedure is of assistance to the learner. This report of the research will therefore be presented in two sections: studies supporting the value of stated purposes for reading, and studies not supporting the value of stated purposes for reading.

Studies Supporting the Value of
Stated Purposes for Reading

Several studies of purpose or direction for reading were conducted during the 1921-1931 time period. The first of these early studies was done by Germane (1921). He divided 100 ninth grade students into two groups. One group read a selection after having read twelve questions and some background material. All students were then tested on the selection read. The raw score means were 14.3 for the group which had been provided the questions and background material in advance, and 13.9 for the control group. The reported grade equivalent for the mean difference was one month--a slightly higher performance for the experimental group. Germane duplicated the study with college students and obtained similar results.

Beaucamp (1925) studied the effect of providing specific training in finding the central thought of a paragraph and determining the questions one must be able to answer in order to obtain an adequate understanding of a topic. Using a group of eighth grade students as the sample to test the technique, it was found that the group which had received specific training achieved a higher raw score than did the control group which had not received the training. There was no significant difference in the comprehension raw scores of the two groups, however.

Yoakam and Truby (1926) tested the effect of stated purposes using a sample of 40 seventh grade students. One group was directed to read in order to report what a sentence said, to select the most important sentences, and to select words which depicted the main idea. The second group was asked to read the same selections but with no

purpose stated prior to reading. Following the reading of four selections, each of the groups was tested to determine the difference in ability to select the most important sentences in the selections read as well as to determine the words which helped to depict the main ideas of the selections. It was reported that the group which had received the stated purposes prior to reading score significantly higher than the control group. The difference between the two groups was a grade equivalent of seven months.

Distad (1927) conducted a study of directed reading with 120 junior high school students serving as the sample. The sample was divided into four equal treatment groups based on I.Q. and reading ability. The four treatments were: (1) reading without direction, (2) subjects read to find answers to eight questions presented by the experimenter before reading, (3) subjects read to find answers to eight questions raised by the subjects themselves before reading, and (4) subjects read after being given a general problem which was to be answered by the selection to be read.

After the 30 subjects in each group had read the selection, they were given a 20 question test of which eight of the questions were the same as the eight questions which had been presented to group two before they read. The mean raw scores reported for each group were: group 1 = 11.8; group 2 = 15.0; group 3 = 14.3; and group 4 = 13.0. The group which read under treatment condition 2 achieved the highest score, while those reading without direction in treatment group 1 scored the lowest. It should also be noted that the group which had determined their own questions before reading also scored considerably higher than those that read without

direction. The general problem also appears to have had a positive affect on the scores achieved.

Washburne (1929) investigated the effect of questions and the placement of questions on the comprehension of high school students. The 1426 subjects were divided into five groups of approximately equal reading ability and were provided a selection to study for twenty-five minutes. The selection studied by each group had been modified by the investigator to include the following treatments: (1) group one received questions concerning facts and generalizations about the content at the beginning of the selection, (2) group two received the same questions at the end of the selection, (3) group three received each question at the beginning of the section of the selection in which it was answered, (4) group four received each question at the end of the section of the selection in which it was answered, and (5) group five received no questions with their selection.

The test which all of the subjects took after reading the selection contained five questions previously presented plus fifteen comparable questions. The investigator reported that the two treatment groups which achieved the highest were groups one and three. He found their scores to be at least 40 percent higher than any of the other three groups. He received similar results on a follow-up test administered two weeks after the original testing. The conclusion was drawn that questions prior to reading do increase a student's ability to comprehend what he reads.

Holms (1931) divided 170 college students into two equal groups and asked them to read selections dealing with science and the history of English literature. The experimental group was provided a set of

twenty questions regarding the material to be read; the control group did not receive questions before reading the material. The twenty questions provided the experimental group served as the test which was administered to both group following the reading of the assigned selections. A second test was given two weeks later. That test contained the same twenty questions plus twenty additional questions pertaining to the selections which had been read at the earlier date. The experimental group was reported to have scored higher than the control group on both tests. The difference between the groups was reported to have been even higher on the second testing than it had been on the first.

Shores (1960) compared the reading performance of 120 seventh through twelfth grade students when asked to read science material for two distinct purposes. The subjects were divided into three groups and directed to read under the following conditions: group one was asked to read each passage for the main idea; group two was directed to read in order to keep the ideas of the passage in mind in their proper sequence; and, group three read the selection with no specific purpose stated. A 20 item test was administered to each of the three groups immediately following the reading of the assigned material. The following mean raw scores were reported: group one = 14.9; group two = 10.8; and group three = 7.2. The reported scores support the conclusion that reading for distinct purposes is of assistance to students.

Henderson (1964) studied the effect student generated purposes have on their comprehension. The sample included 24 good readers and 24 poor readers in seventh grade. The subjects were assigned to three groups of comparable I.Q. and reading ability. The three treatments were: (1) group one received a purpose for reading from the teacher

prior to reading a selection, (2) group two received no stated purpose before reading a selection, (3) group three was asked to provide their own for reading the selection.

A 40 item test was administered to each of the groups following their reading. The results of the testing were reported in the following grade equivalent scores: group one = 8.1; group two = 7.3; and, group three = 9.2. The conclusion was drawn that students who establish their own purposes prior to reading comprehend better than those who receive a purpose from the teacher, and significantly higher than students reading without a stated purpose.

Ballard (1965) investigated the effect different kinds of questions have on comprehension. A sample of 30 sixth and 30 seventh grade students were assigned to three treatment groups equated by reading comprehension scores. The treatments for each of the groups were: (1) Three guiding questions were presented to the subjects before they read a selection. (A guiding question being one which contained references to specific detail from the selection to be read.) (2) Three motivating questions were presented to the subjects before they read the selection. (A motivating question was much more general than any of the guiding questions and was concerned with the main idea of the selection rather than specific detail.) (3) No questions were presented to the subjects before they read the selection.

A ten item test was administered to the subjects in each of the three groups following the reading of the assigned selection. Each correct answer was assigned a value of 10 points. The results reported for the three groups were: group one = 50.1; group two = 48.4; and, group three = 45.1. The investigator concluded that students reading with

guiding questions achieve better than those reading with motivating questions or no questions. Reading with motivating questions was seen as being superior to reading with no questions. It is difficult to have much confidence that the 10 item test used in this study is actually differentiating between groups.

Petre (1971) conducted a comparison of two recommended methods for directed reading activity in elementary classrooms. The sample was 120 fourth grade students drawn from two neighboring school districts. One district employed a basal reading program which advocated the Directed Reading Activity (DRA) for a minimum of four years. The other district used a basal series which employed the Directed Reading-Thinking Activity (DR-TA) for at least four years. All fourth grade students in each community were arranged into above-average level, at-grade level or below-grade level by their teachers according to a specified procedure. The subjects were then assigned to 24 groups of 4 subjects each with each of the districts having two groups above-grade level, two at-grade level and two groups below-grade level. Twelve lessons, as outlined by the basal reader, were taught by the investigator to each of the groups during a two-week period. A trained observer was present during the teaching of all lessons. The lessons were all transcribed and each subject response was coded on the Quality of Pupil Response Scale by trained raters.

The results of the study indicated there was a significant difference between ratings achieved by the two groups at all three reading levels. The subjects using the DR-TA method scored higher than those taught with the DTA method, leading the investigator to conclude that there was a significant difference in the two methods.

He noted that although the DR-TA group scored higher at all reading levels, the above-grade level sub-groups were especially affected.

An integral part of the DR-TA is the clear statement of purpose prior to each reading assignment. In the DR-TA method teachers are directed to help students form their own purposes for reading most of the time.

Studies Not Supporting the Value of Stated Purposes for Reading

The studies reported thus far have either supported or lent support to the hypothesis that purposes for reading improve a student's comprehension. The studies which will be reported in this section failed to support that hypothesis. It may be of interest to note that whereas the studies reported during the 1920's and 1930's, the non-supportive studies did not appear in the literature until the last twenty years.

Christensen and Stordahl (1955) conducted a study to determine the effect questions and organizational aids on the reading comprehension of college students. They divided 50 college students into the following treatment groups: (1) group one had organizational aids such as headings and sub-headings in their reading selection. Questions were also provided before reading the selection; (2) group two had no organizational aids nor were questions provided prior to reading the selection.

The subject answered a 25 question test based on the material read. The subjects in group two achieved a mean raw score of 19.7. The mean raw score for group one was 19.4. Although there was no significant difference between the two groups it is of interest to note

that this is the earliest investigation in which the group which read without a specific purpose, questions or some form of external assistance achieved a higher score.

Snavely (1963) reported a study designed to determine the effect providing statements of purpose before the reading of a selection and marginal notes during reading had on comprehension. The sample for this study included 81 sixth, 68 eighth and 87 tenth grade students. The subjects were assigned to three groups to test the following conditions: group one read material with no marginal notes or purpose statements; group two read the same material preceded by a purpose statement; and, group three read the same material which included marginal notes. A twelve item multiple-choice test was administered to the subjects at the conclusion of their reading. Snavely found that the sixth grade students in group one scored a grade equivalent of 6.7, those in group two 6.5 and in group three 6.4. The eighth grade students in treatment group one scored 8.4, the students in group two scored 8.2 and those in group three achieved a score of 8.0. The tenth grade students scored 10.3 in group one, 10.0 in group two and 10.1 in group three.

The results failed to support the hypothesis that organizational aids are of assistance to students in reading comprehension. The grade equivalent scores indicate that the subjects who read without purpose statements or marginal notes performed better on the comprehension test than the subjects of the other two groups. While the primary observation to be made of this study is the failure to confirm the hypothesis, it should also be noted that a 12 item test is rather brief at least for purposes of reliability and comparisons made of grade equivalent

scores is not as precise a measurement as might have been attained with raw scores.

Bloomer and Heitzman (1965) conducted a study of the effect pre-testing has on the efficiency of paragraph meaning. The sample of 80 eighth grade students was assigned to four treatment groups of comparable I.Q. and reading ability. The groups read under these conditions: (1) A pre-test was administered prior to reading an assigned selection. (The pre-test was identical to the post-test.) (2) No pre-test was given prior to reading the assigned selection. (3) No pre-test was given prior to reading the assigned selection in which the Cloze procedure was used (omitting every tenth word). (4) A pre-test was given prior to reading the selection in which the Cloze procedure was used.

The post-test the reading selection had been taken from was administered to all subjects. The results were reported as follows as mean grade equivalent scores: group one = 8.2; group two = 9.0; group three = 9.4; and, group four = 8.4. The scores achieved by the subjects in groups one and four did not support the hypothesis that pre-testing is of assistance in reading comprehension. The subjects who had not seen the test question before reading achieved higher mean grade equivalent scores than those who had seen them.

Grant and Hall (1967) studied the effect of broad thought-directing questions on comprehension at varying levels of difficulty. The sample was 279 sixth grade students. The subjects were randomly assigned to two groups to read under the following conditions: (1) Group one was given a broad thought-directing question prior to reading an assigned selection. The subjects were informed that they were

to answer some questions after reading. (2) Group two was asked to read the selection. The subjects were also told they were to answer some questions after reading.

A ten item, multiple choice type test was administered following the reading. Although it was not reported, this investigator made the assumption that a correct response for each question was valued at 10 points. The results were reported as mean scores for each group with sub-groupings of above-average readers, average readers and below-average readers. It was reported that no significant difference existed between the two above-average groups nor between the two below-average groups. The average readers from the experimental group scored 6 points higher than the control group. The investigators concluded that whereas broad thought-directing questions may be helpful to average readers, and quite likely are of little value to good readers. They speculate that the above-average reader probably has his own purposes in mind as he reads.

Goudey (1968) performed an investigation with 300 fourth grade students to compare their reading performance under directed and non-directed conditions. The subjects were assigned to two treatment groups of approximately the same reading abilities. The subjects read under these conditions: (1) Group one was asked to take a 60 item reading comprehension test in its original format. (The test required a subject to read a series of short paragraphs and answer several multiple choice questions which followed each paragraph.) (2) Group two was asked to take the 60 item reading comprehension test in an altered format. (The questions which followed each paragraph in the test were presented prior to the paragraph. The subjects

could read them, read the paragraph, and then answer the same questions which followed the paragraph.)

The results failed to confirm Goudey's null hypothesis that there would be no difference in the scores achieved by the two groups. He found that on one of the two sub-tests the non-directed group (group one) performed significantly higher than the group which had read under directed conditions. The results were reported as mean raw scores for the two parts of the test: Reading for Information and Reading for Appreciation. On the Reading for Information section, the scores were: group one = 13.15 and group two = 12.00. On the Reading for Appreciation sub-test, the scores were: group one = 12.29 and group two = 12.83. It should be noted that the hypothesis for the second sub-test was confirmed: there was no significant difference between the comprehension scores achieved by the two groups.

Goudey also analyzed the data by sub-dividing each of the two groups according to I.Q. He found that the middle I.Q. group who had read under non-directed conditions scored significantly higher than the middle I.Q. group which read under directed conditions. The comparison of the data from the other groups indicated that no significant difference existed. Goudey questioned the advisability of continuing to direct the reading of students if researchers are unable to justify the practice.

Summary of the Review of the Literature

This chapter has provided a review of the literature related to reading comprehension and the thinking processes, expert opinions

regarding the directing of reading through stated purposes for reading and research studies on directing reading through stated purposes.

The literature reviewed suggests the processes of reading and thinking are very closely related. It was suggested that there are several levels of comprehension which require the use of different levels of thinking.

The opinions of the experts support the practice improving student comprehension by establishing purposes before reading. The research investigations which have been conducted, however, present a mixed report on the affect stated purposes for reading actually have on a student's comprehension.

CHAPTER III

DESIGN AND PROCEDURE

The purpose of this investigation was to study the performance of fifth grade students on reading comprehension tasks under two conditions: (1) when stated purposes for reading are provided prior to reading, and (2) when stated purposes are not provided prior to reading.

More specifically, answers to the following questions were sought:

1. Does the practice of providing stated purposes for reading improve a student's ability to comprehend what he has read?
2. Does the provision of stated purposes for reading improve a student's ability to understand and apply knowledge at different levels of comprehension?

Answers to several additional questions were also sought in this investigation. They were:

3. Do stated purposes for reading improve a student's ability to understand and apply knowledge in the content areas of social studies and science?
4. Do stated purposes for reading affect the responses of the low, middle and high scholastic ability students differently?
5. Do stated purposes for reading have a positive effect on the responses of low, middle or high level achievers in the area of reading comprehension?

This chapter presents information on the design of the study, the procedures used in collecting the data, the statistical analyses and the hypotheses to be tested.

The Sample

The sample for this investigation was comprised of all fifth graders in Independent School District #191, Burnsville, Minnesota. The school district encompasses parts of the Minneapolis suburbs of Burnsville, Egan and Savage. Between 1958 and 1973 the district grew from an enrollment of about 200 to approximately 10,000. The student-staff ratio, the materials and the facilities provided within the district are reported by the Educational Research and Development Council to be above average in oomparison to the forty school districts which are members of the Metropolitan ERDC (Stark, 1973).

The organizational pattern employed in the district is a K-6, 7-9, and 10-12 arrangement. There are eight elementary schools to serve the K-6 enrollment of 5741 students. The schools range in size from 416 students at the Savage Elementary School to 965 students at the Gideon Pond Elementary School. Although there appears to be a trend in the district toward ungradedness for reading instruction, the majority of the students are assigned to self-contained classrooms.

There was a total of 871 fifth grade students enrolled in the district at the time this study was conducted. They were assigned to 32 classroom units in the eight elementary schools. The number of students per classroom ranged from a low of 22 to a high of 40.

Assignment of Students to Groups

The classroom units were assigned identification numbers from 1 to 32 for use in this study. The classroom units were then randomly assigned to either the experimental group or the control group. There were 431 students assigned to the experimental group and 440 students assigned to the control group.

A comparison was made of the two groups to determine that no obvious differences existed. Included in that comparison were: the grade equivalent score for the fall reading comprehension test and the standard score for the non-verbal I.Q. The results of that comparison are provided in Table 1.

TABLE 1

COMPARISON OF EXPERIMENTAL AND CONTROL GROUPS

	Experimental Group		Control Group			
	N	$\bar{X}$	N	$\bar{X}$	F	Significance
Fall Reading Comprehension G.E. Score	411	5.96	377	5.72	1.62	N.S.
Non Verbal I.Q. Standard Score	412	110.15	378	107.41	1.20	N.S.

The two groups had similar percentages of boys and girls. There were 209 girls (50.6%) and 206 boys (49.4%) in the experimental group. The control group was comprised of 193 girls (49.4%) and 189 boys (50.6%).

Subjects Lost or Omitted

It was not possible to include all 871 students in the investigation. Several subjects were absent on the day tests were administered. Another group of 40 subjects were participants in a separate investigation being conducted at approximately the same time and therefore had to be omitted from this study. The background data were not available for 16 subjects. These 16 subjects took the tests and the results of those tests are included in some of the analysis that were made, but in other comparisons requiring background information, they were not included. Table 2 provides a summary concerning lost or omitted subjects from this study. Table 3 summarizes the incomplete data.

TABLE 2

SUMMARY OF SUBJECTS LOST OR OMITTED

	Experimental Group	Control Group
Absent when Reading Comprehension tests were administered	16	18
Members of a separate investigation when tests were administered	0	40
Total subjects lost or omitted	16	58

TABLE 3

SUMMARY OF SUBJECTS WITH INCOMPLETE DATA

	Experimental Group	Control Group
Fall reading comprehension score not available	4	5
Standard scores for the non-verbal I.Q. not available	3	4
Total subjects with incomplete data	7	9

Ability Measurement

The CAT (Cognitive Abilities Test) is administered to all third, fifth and seventh grade students in Independent School District #191 each year. This test was taken by the subjects approximately one month prior to the testing conducted for this investigation.

The CAT is comprised of ten subtests which are assembled into three batteries--verbal, quantitative and non-verbal. Although the subjects took all three batteries for district purposes, the investigator determined that the non-verbal battery would be most appropriate for use in this study. The scores achieved by the subjects should be less affected by their reading ability, as explained by the test publisher:

> The Nonverbal Battery consists of the following three subtests: Figure Analogies, Figure Classification, and Figure Synthesis. The items in the subtests of this battery involve neither words nor numbers, and the geometric or figural elements used bear little direct relationship to formal school instruction. The subtests emphasize discovery of and flexibility in manipulating relationships expressed in figural symbols or patterns.
>
> The Nonverbal Battery measures more nearly what has been called "fluid intelligence," that is, ability that is not bound by formal school instruction (Thorndike and Hagen, 1971, p. 4).

Reliability of the Ability Measurement

Estimates of reliability for the CAT were based on the data from a single tests with the first form of the test. A random sample of students was drawn from the standardization sample in each grade. The proportion of students correctly answering each item was calculated and these P values were used to compute Kuder-Richardson reliabilities using Formula #20. The reliability estimate for test level C, the level used with the fifth grade subjects in this study, was .933 (Thorndike and

Hagen, 1971, p. 102). This estimate of reliability was judged to be sufficiently high to justify the use of the CAT Nonverbal Battery scores in this investigation.

Validity of the Ability Instrument

The examiner's manual for the CAT provides an explanation of both content validity and construct validity. The test was developed to appraise reasoning abilities that are of importance in academic and everyday life activities. The content of the Nonverbal Battery was reported to have been chosen specifically to provide an opportunity for a person with good reasoning abilities but poorly developed reading and quantitative skills to reveal his reasoning abilities (Thorndike and Hagen, 1971).

The CAT was designed to measure relational thinking. Through an internal correlation of the 10 subtests the publisher has determined that there is a strong common factor running through all of the subtests--a factor they have called relational thinking. They report, however, a verbal factor was clearly evident in the four subtests that constitute the verbal score, and a nonverbal or figural factor was clearly evident in the three tests that constitute the nonverbal score. The evidence provided indicates that the quantitative factor was weaker and was heavily dependent upon the general reasoning factor which was present throughout the test.

The content and the construct validity of the Nonverbal Battery of the CAT warrant the use of the scores in this study.

Reading Comprehension Achievement Measurement

The SRA Achievement Series, published by Science Research Associates, Inc., is used by Independent School District #191 to help

monitor the curriculum program in grades four through eight. The assessment surveys (tests) are administered to all fourth, fifth, sixth and eighth grade students each September. The student answer sheets are machine scored and the results are made available to students, parents, teachers and the administration.

The SRA Achievement Series measures achievement in the following areas: Reading, Language Arts, Mathematics, Social Studies, Science and Use of Sources.

The reading section of the test is divided into two parts: comprehension and vocabulary. This investigator selected the Reading Comprehension Test for use in this study because it provided the most recent reading comprehension achievement scores for the subjects being studied and was available for the majority of the students included in the sample.

Reliability of the Achievement Measurement

The report of the standardization study to gather normative data for the SRA Assessment Survey provides a description of the procedures used along with the estimates of reliability. In order to obtain a sample which would be representative of the national student population, SRA used a three-stage randoming sampling procedure. The first stage was the construction of a 72-cell matrix made up of nine geographical regions and eight classes of school districts, based on district size. Districts were randomly selected to fill each cell of the matrix. In the second stage, schools were randomly selected from each previously selected district. Finally, classrooms within three schools were randomly selected. This standardization took place in

1971 with approximately 156,000 students from 6,500 classrooms in 220 school districts involved. There were 9,623 fifth grade students included in the standardization sample from the Blue Level, Form E, of the test. Table 4 indicates the Kuder-Richardson reliabilities using Formula #20 from the Blue Level, Form E, of the test, the level and form used by the subjects in September, 1972 (Noggle, 1972).

TABLE 4

KR-20 RELIABILITIES - BLUE LEVEL, FORM E - GRADE 5

Test	Reliabilities
Composite	.99
Reading	
Comprehension	.91
Vocabulary	.93
Total	.96
Language	
Usage	.94
Spelling	.89
Total	.95
Mathematics	
Concepts	.88
Computation	.91
Total	.94
Social Studies	.91
Science	.93
Use of Sources	.91

The reliability estimate of .91 on the Comprehension Test was judged by the investigator to be adequate for purposes of this study.

Validity of the Achievement Measurement

The manual, Using Test Results: A Teacher's Guide (Moggle, 1972), provides an explanation of the procedures used to develop each of the tests in the Achievement Series. A brief description of the four basic steps taken in the development of each test item follows:

Content planning. Textbooks, supplementary instructional materials, and achievement tests were reviewed. State and local school curricula were studied. Research literature on the subject matter areas was researched. Content parameters were specified.

Item writing. Teachers, educational writers, and curriculum specialists from all parts of the country wrote test questions according to the content specifications. Many more items were written than used on the final test forms. Collectively these became a bank for pretesting and selecting items.

Item pretesting. Items were edited, grouped according to desired subtests, and pretested on students from representative schools throughout the country. The statistical characteristics of the items were determined, and the same items were reviewed by teachers and curriculum specialists.

Item selecting. The pretested items were grouped according to the objectives outlined in the content specifications and evaluated against pretest statistics and reviewers' comments. This procedure ensured that the selected items were free of particular curriculum or cultural bias, had the necessary content validity, and correlated well with total scores on the appropriate subtests.

The publishers state that the activities listed above indicate how the content validity of the Achievement Series was determined. In the final analysis the question of content validity rests with the test user, according to the publishers. They state that by comparing local expected outcomes with those measured by the Achievement Series, the test user can decide whether or not the tests meet local needs (Noggle, 1972).

The content validity of the reading sections of the SRA Achievement Series was judged by the investigator to be adequate for purposes of this study.

Materials Used in the Investigation

Selection of the Reading Comprehension Test

The design of this study called for the use of an instrument that would yield a reading comprehension score for each of the 871 subjects. It was also essential for purposes of this study that the instrument used differentiate each subject's performance according to the six cognitive levels of comprehension defined for analysis in this investigation.

There was no test of reading comprehension available commercially which would exactly meet all design requirements of this study. The investigator determined, through a review of the published comprehension tests, that the SRA Achievement Series could be modified to meet the requirements of this study. The SRA test provided several advantages for use in this investigation, namely: (1) it yields a total reading comprehension score, (2) the subtests of the six different levels of comprehension have been identified and standardized,

(3) the format of the test was familiar to the sample and to the teachers who were to administer it, and (4) the staff of the district in which it was to be administered felt it was a valid test for use with their students.

The SRA Achievement Series is described at length in the preceding section of this chapter. One important aspect of the tests which requires elaboration is the subtests in the Reading Comprehension Test. The Reading Comprehension test consists of sixty items. Those sixty items have been grouped into the following subtests:

> Story Context: Select the definition of a word with multiple meanings that best suits a particular context. (Twelve items)
> Re-state Material: Recognize a re-statement of material that is explicitly stated in the passage; select a specific detail that is stated in the passage. (Eleven items)
> Sequence and Summarize: Select the proper sequence or ideas or action in the passage; select main ideas or choose an appropriate title for the passage. (Seven items)
> Draw Inferences: Recognize material that is implied but not specifically stated in the passage; recognize a character's motivations and emotions; select probable reasons for actions. (Eleven items)
> Apply to New Situation: Recognize a valid example of something stated in the passage; choose a likely outcome with one variable changed; select correct applications of the information in the passage to a new situation. (Six items)
> Logical Relationships: Recognize the relation between premises or sections of the passage; recognize validity of procedures and variables in science and social studies passages; distinguish between fact and opinion; choose statements or examples of technique and point of view. (Thirteen items) (Noggle, 1972, pp. 17-18).

The investigator determined that these six subtests would permit analysis of the affect stated purposes for reading have on various levels of comprehension.

Although the low number of test items included in two of the subtests (Sequence and Summarize and Apply to New Situations) presented a limitation for the study, the investigator decided that the extensive

standardization which had been performed by SRA outweighed any advantage that might be realized by developing a new test for this investigation.

The SRA Achievement Series also provides for an analysis of each student's level of comprehension in the content reading areas of social studies and science. There are sixteen social studies items and sixteen science items contained within the Reading Comprehension test which have been identified by the test authors as being indicative of a student's reading comprehension skills in those areas. Although this information was not called for in the original design of the study, it was of secondary interest to the investigator and an analysis was performed to determine the affect of directed reading on the scores in those content reading areas.

Preparation of Materials Used in the Investigation

Two forms of the Reading Comprehension Test were prepared for this investigation: The Regular Edition which was administered to the control group and the Modified Edition which was administered to the experimental group. It was also necessary to prepare an examiner's manual for each of the two test editions. Permission was granted by Mr. Stanley Hanson, representative of Science Research Associates, Inc., for the investigator to modify and reproduce the Reading Comprehension Test from the SRA Achievement Series, Form E/Blue Level for use in this study.

The Regular Edition of the Reading Comprehension Test

The Regular Edition of the Reading Comprehension Test was reproduced via offset press in a format which was nearly identical to the

original Reading Comprehension Test, Form E/Blue Level. In order to have all subjects indicate their choice of answers to each question in the test booklet, it was necessary to add a personal data page and to change the directions to the subjects regarding the marking of their answers. The page which was added to the test booklet required each student to indicate: Student Name, Boy or Girl, Classroom, Elementary School and Classroom Teacher. The personal data page also provided four additional blanks which were used later by the investigator to insert background data for each student (see Appendix C, page 120). The directions on page three of the original test were altered to direct students to mark their chosen answers in the test booklet rather than on an IBM answer sheet. It was also necessary to change the spacing on some of the test pages so that the number of questions on each page of this edition corresponded directly with those of the Modified Edition. The cover of the test booklet was also changed. The color and texture of the paper used varied both from the original form and from the Modified Edition in that it was a blue-green, textured mimeograph paper. The words: Regular Edition were placed in the lower right-hand corner of the test booklet cover for identification purposes.

The format of the Regular Edition is described in the directions to students contained on page three of the test booklet (see Appendix B, page 113).

The Modified Edition of the
Reading Comprehension Test

The Modified Edition of the Reading Comprehension Test was also reproduced via offset press in a format that was as much like the original Reading Comprehension Test, Form E/Blue Level and the Regular

Edition as possible. The only major difference between this modified edition and the Regular Edition is in the stated purposes for reading which were inserted prior to each reading selection in the test (see Appendix D, page 134).

An additional page identical to the Regular Edition insertion was inserted in this Modified Edition for personal data. The directions to students were modified for this edition; the students were asked to read the directions prior to reading each selection. The spacing between reading selections and questions, and between questions had to be modified to provide space to insert the "stated purposes for reading" immediately prior to each of the six reading selections in the test. The cover of the test booklet differs from the original and from the Regular Edition of the Reading Comprehension Test in the color and texture of the paper used and in that the words: Modified Edition were placed in the lower right hand corner for identification. The paper used for the cover was a blue, 20 pound ditto paper.

The Examiner's Manual

The Multilevel Examiner's Manual provided for use with the SRA Achievement Series contained more information than was needed for use in this study. In some cases the information was not applicable for this testing situation (Science Research Associates, 1971c). The investigator revised the Multilevel Examiner's Manual into two Examiner's Manuals: one for the Regular Edition of the Reading Comprehension Test, and the other for the Modified Edition of the Reading Comprehension Test. The complete script for each test examiner was contained in each booklet along with general information relative to the testing situation.

There were two significant changes made in each of the Examiner's Manuals. The first dealt with the way in which each child was to provide information about himself and how he was to mark his answers in the test booklet. The second major change from the normal administration of the original comprehension test was in the time recording each test examiner was asked to perform. Directions were provided on page two of the manual indicating the manner in which each examiner was to record the time each student in his group completed the test. A Time Record Sheet was devised and included as pages five and six of each examiner's manual (see Appendices B and D, pp. 113 and 120).

The manuals were reproduced on mimeograph paper in a format similar to that of the Multilevel Examiner's Manual. The Examiner's Manual for the Modified Edition of the Reading Comprehension Test differed from the Regular Edition in only two ways: (1) the Modified Edition had an M on the cover, whereas the Regular Edition has an R on the cover for identification, and (2) the directions to students that the examiners were to read to the students were different than those the examiners were to read to the students taking the Regular Edition (see Appendices B and D).

Reliability of the Reading Comprehension Tests

Although it was reported in a previous section of this chapter that SRA had indicated a KR-20 reliability of .91 for the Reading Comprehension Test, this investigator wished to determine the test reliabilities for this sample following the administration of the Regular and Modified Editions of the Reading Comprehension Tests. The Research Bureau at the University of North Dakota submitted the results from the

tests to the TESTAT program to determine the internal consistency reliabilities using Cronbach's Alpha. The alpha coefficient of internal consistency (Cronbach, 1951) reflects the degree of reliability among the items of a scale, in terms of overlapping variance. The formula is a generalization of the Kuder-Richardson Formula 20 for dichotomous items. The TESTAT program also reported the reliability coefficients of the subtests of reading comprehension for the total group tested (see Table 5).

TABLE 5

CRONBACH'S ALPHA - READING COMPREHENSION TEST-FORM-E GRADE 5

Test	Number of Items	Mean	Alpha
Story Context	12	9.91	.78
Restate Material	11	7.56	.70
Sequencing and Summarizing	7	4.22	.49
Drawing Inferences	11	7.83	.68
Making Applications	6	4.38	.50
Logical Relationships	13	7.72	.72
Total Test	60	41.61	.92

The reliability coefficient of .92 is considered excellent for an achievement test of 60 items. The reliability coefficients for the subtests: Story Context, Restate Material, and Logical Relationships fall within the .70 to .80 range and approach the generally recommended level for achievement tests. The subtests: Sequencing and Summarizing,

Drawing Inferences, and Making Applications, have reliability coefficients in the .40 to .70 range.

The confidence that a researcher may have that these subtests will consistently measure what the authors claim to measure is reduced (Williams, 1968). The relatively low reliability coefficients for the three subtests become a limitation of this study. Any observations or generalizations regarding data gathered from these subtests must be advanced cautiously.

Validity of the Reading Comprehension Tests

The degree of validity of the Regular and Modified Editions of the Reading Comprehension Tests relies heavily on the determination the investigator reported earlier in this chapter that the content and the construct of the original Reading Comprehension Test was a valid measure for this sample. The content of the two editions of the test was not changed for use in this investigation.

Testing Procedure

Pilot Testing

Two fourth grade classroom teachers at the Gideon Pond Elementary School volunteered to have their students serve as the sample for the pilot testing of the Regular and the Modified Editions of the Reading Comprehension Test. The Administrative Assistant to the Principal at the Gideon Pond Elementary School agreed to administer the Modified Edition to one classroom of students and the investigator administered the Regular Edition. The tests were administered in the students' regular classrooms at 9:00 a.m. on December 19, 1972.

Although the Regular Edition and the Modified Edition of the Reading Comprehension Test were designed for use with fifth grade students in this investigation, the original tests were designed for use with students in grades four, five and six. The pilot testing with fourth grade students, therefore, seemed to be justified.

The two test administrators were directed to use the script provided to them in the Examiner's Manual. They were asked to make written notes of any parts of the script which appeared to be unclear or confusing for students. They were also asked to keep a written record of the time at which each student completed the test. The time allowed students was unlimited. The test booklets were collected by the test administrators after ninety minutes when all but two of the fifty-one students had completed the tests. The two students who had not completed the tests were moved to the conference room so they could complete the tests while their peers continued with their normal studies.

The students had been directed to complete blanks which called for: Student Name, Boy or Girl, Classroom, Elementary School and Classroom Teacher. Four additional blanks had been provided on this page so that the investigator could record: Age; Grade Equivalent for the Reading Comprehension test taken in September, 1972; I.Q. score, and total time used to take the test. The investigator completed the identification page (page two) in each of the student's booklets. These data, along with the answers selected by the students for each question on the tests, were recorded on coding forms and submitted to the Research Bureau at the University of North Dakota for scoring and analysis.

The pilot testing produced several valuable findings for the investigation. Most importantly, the tests did discriminate between

students and they appeared to be valid tests for use with the anticipated sample. It was also found that the script for the test administrators needed to be much more detailed. Based on the time required by the fourth grade students, the investigator determined that during the testing procedure with the anticipated sample all student booklets could be collected at the end of a sixty minute period. The coding of the age of each student had to be changed to age in terms of total months rather than the years and months of age used with the fourth grade sample.

The script contained in the Examiner's Manual was rewritten in more precise terms to eliminate both the student and test administrator uncertainty that occurred during the pilot testing. Provisions were made to change the coding procedure following the administration of the tests to reduce the human error factor and to have the data in a form that was programable for computer analysis.

Training the Test Administrators

A training session was conducted by the investigator for all potential test administrators on Monday, May 1, 1973. The test administrators were to be all thirty-two fifth grade teachers in Independent School District #191. The eight elementary principals were to serve as substitute test administrators in the event that a teacher was absent on the morning the tests were administered. The two district helping teachers volunteered to administer the tests in any classroom where neither the teacher nor the principal was able to perform.

A letter was sent to all fifth grade teachers, elementary principals and helping teachers on April 24, 1973 explaining the testing which was to take place on May 3, 1973 (see Appendix A). They were invited to the test administrators' meeting scheduled for May 1. The

desire to have all of the tests administered at the same time, on the same day, was explained to them. An explanation of the importance of their attendance at the training meeting was followed by an offer from the investigator to meet with any of them individually if they were unable to attend the meeting.

The training session was divided into four parts in an attempt to provide a setting in which the potential test administrators would both receive the desired message and feel comfortable about asking questions. The meeting was divided as follows:

1. Explanation of the purpose and the general procedures for the testing.
2. Small group meeting with the teachers whose classes had been assigned to the control group as well as all the principals and helping teachers to study the script.
3. Small group meeting with the teachers whose classes had been assigned to the experimental group and all principals and helping teachers to study their script.
4. Informal coffee session during which individuals could clarify questions with the investigator.

Each teacher left the training session with the materials which would be needed for testing his or her group of students. Those materials were: 1 test booklet for each student, 1 Examiner's Manual, two extra student test booklets, a Testing-Do Not Disturb sign for the door of the classroom, and a large self-addressed envelope in which to return all testing materials to the investigator at noon on May 3. Although all of the teachers had administered the Reading Comprehension Test in its original form in September, 1972, each potential test administrator

was provided with a copy of the student booklet and encouraged to administer the test either to a friend or to themselves prior to the morning of May 3. Each of the potential test administrators was given the investigator's telephone number and encouraged to call if they had questions before, during or after the testing session.

The Testing Procedure

In order that variables extraneous to this study were more carefully controlled, all tests were administered to the sample on the same day (May 3, 1973), at virtually the same time (9:00 a.m.), by the regular classroom teacher in the classroom to which each student was normally assigned. The classrooms were well lighted and ventilated. Care was taken to prevent interruptions. The script contained in the Examiner's Manual was followed by the test administrators in the manner outlined at the test administrators' training session.

The test administrators for both the control group and the experimental group established the desired test setting within their classrooms, posted the Testing--Do Not Disturb signs on the classroom doors, and distributed the student booklets. They read the directions for taking the tests to the students, answered any questions the students might have had and told the students when to "Begin." They noted the beginning time of testing on the Time Record Sheet contained in the Examiner's Manual, observed the students as they worked through the test, made a written notation of the time each student completed the test and told the students to "Stop" after a sixty minute time period had elapsed. The test administrators collected all student booklets, placed the booklets together with all other testing material in the self-addressed

envelope and deposited them in their elementary school office for forwarding to the investigator.

The test administrators for both the control group and experimental groups followed the same directions. The only difference in the administration of the two forms of the test was in the directions which were read to the students (see Appendices B and D).

The only problem encountered on the day the tests were administered was the absence of a fifth grade teacher. The principal of that particular building had been called to an unexpected meeting and both of the helping teachers were unavailable. The tests in classroom #23 were administered by the investigator.

Scoring the Reading Comprehension Tests

The tests were all corrected by the same person using a scoring key provided by the investigator. A correct response received an indication of "1" and an incorrect response was indicated by a "0." This hand-scoring process took place over the two-week period following the administration of the tests. The results of each test were then recorded on coding forms by the same individual who had corrected the tests. Due to the large sample (797), this process took place over about a three-week period.

The investigator recorded all of the background information on page two of each student booklet: age in total months; grade equivalent scores from the Reading Comprehension Tests (Form F) which had been administered to the sample in September, 1972; standard scores from the non-verbal battery of the Cognitive Abilities Test which the sample had taken in April, 1973; and the total time used in taking

the test. This information, along with that supplied on page two by each student, was recorded on the coding forms.

It was necessary for the analysis which was to follow to assign an identification number to each student and to each elementary school. The student identification numbers ranged from 001 to 797 and the school identification numbers were 1 through 8. Sex was coded "1" for boys and "0" for girls. The classrooms had been assigned identification numbers during the assignment of subjects to either the control or the experimental group. Those numbers ranged from 01 to 32.

A re-check for accuracy of both correcting of student booklets and coding of all data was performed. A random selection was made of fifteen student booklets from the control group and fifteen student booklets from the experimental group. It was found that eight errors had been made in correcting the eighteen hundred items on those tests. The errors made were evenly distributed between the control and the experimental group, four errors on the fifteen booklets selected from each group. A second random selection of fifteen student booklets from each group revealed that six errors had been made in recording the twenty-four hundred indications from those booklets. Again, the errors made in coding were evenly distributed between the control and the experimental groups. Three errors were made in one of the fifteen booklets of the control group and one error had been made in one booklet and two errors made in a second booklet from the experimental group. Those errors were not corrected and therefore remain a factor in the study. The investigator is confident that a correcting error of .0044 and a coding error of .0025 will have little, if any, effect on the analysis of the data.

Statistical Treatment

This investigation was designed to provide answers to the five questions identified in general form in Chapter I and again at the beginning of this chapter. They are presented in specific null hypothesis form immediately following this section.

The analysis of variance procedure is appropriate for this investigation as it sorts " . . . the information in an experiment into nonoverlapping and meaningful portions" (Hays, 1963, p. 409). For a detailed discussion of the analysis of variance procedure the reader is referred to Hays (1963) and Edwards (1965).

The data gathered from the administration of the Regular Edition and Modified Edition of the Reading Comprehension Tests were initially analyzed by comparing the total experimental and control groups. The data for each of the six subtests were then analyzed for the total experimental and control groups. The subjects from the experimental and control groups were then divided in high, middle and low achievement groups according to their scores on the fall reading comprehension tests and the data were analyzed to compare the high experimental and control groups, the middle experimental and control groups and the low experimental and control groups. The subjects from the experimental and control groups were again divided into high, middle and low non-verbal I.Q. groups according to their scores on the Cognitive Abilities Tests and the data were again analyzed to compare the high, middle and low non-verbal I.Q. groups. Finally, the data from the Social Studies and the Science subtests were analyzed to compare the total experimental and control groups.

Two-tailed tests for significance were employed in this study because the hypotheses were formulated in a non-directional nature. The level of significance set for rejection of each null hypothesis was .05. For a discussion of levels of significance the reader is directed to Williams (1968) and Edwards (1965).

Null Hypotheses

The following null hypotheses were tested to determine the affect providing stated purposes for reading has on the total reading comprehension score when the experimental group used the Modified Edition of the Reading Comprehension Test and the control group used the Regular Edition of the Reading Comprehension Test:

1. There is no difference between the overall mean scores of the experimental group and the control group.
2. There is no difference between the overall mean scores of the experimental group and the control group when the subjects are subgrouped by past achievement scores.
   a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.
   b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.
   c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.

3. There is no difference between the overall means scores of the experimental group and the control group when the subjects are subgrouped by non-verbal I.Q. scores.
   a. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.
   b. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.
   c. For the low I.Q. group there is no difference between the mean scores of the experimental and the control group.

The following null hypotheses were tested to study the affect providing stated purposes for reading has on the six defined levels of reading comprehension:

4. On the Story Context subtest there is no difference between the mean scores of the experimental group and the control group.
   a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.
   b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.
   c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.

d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.

e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

5. On the Re-State Material subtest there is no difference between the mean scores of the experimental group and the control group.

a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.

b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.

c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.

d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.

e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

6. On the Sequence and Summarize subtest there is no difference between the mean scores of the experimental group and the control group.

   a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.

   b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.

   c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.

   d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.

   e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

   f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

7. On the Draw Inferences subtest there is no difference between the mean scores of the experimental group and the control group.

a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.

b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.

c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.

d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.

e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

8. On the Apply to New Situations subtest there is no difference between the mean scores of the experimental group and the control group.

a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.

b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.

c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.

d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.

e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

9. On the Logical Relationships subtest there is no difference between the mean scores of the experimental group and the control group.

a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.

b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.

c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.

d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.

e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

The following null hypotheses were tested to determine the affect stated purposes for reading has on the comprehension scores in the content areas of social studies and science:

10. On the Social Studies subtest there is no difference between the mean scores of the experimental group and the control group.

11. On the Science subtest there is no difference between the mean scores of the experimental group and the control group.

Summary

This chapter has presented information on the sample, the ability measure, the reading comprehension achievement measure, the materials used in the investigation, the procedures used in collecting data, the statistical analysis and the hypotheses to be tested.

CHAPTER IV

THE FINDINGS

The purpose of this investigation was to study the performance of fifth grade students on reading comprehension tasks under two conditions: (1) when stated purposes for reading are provided prior to reading, and (2) when stated purposes are not provided prior to reading.

The related literature was reviewed in Chapter II. The sample, test instruments, testing procedures, statistical treatment and hypotheses were presented in Chapter III. This chapter contains the findings of the investigation.

Sources of Data

Answers to the questions posed earlier were sought using the following sources of information: (1) a total reading comprehension score obtained on a 60 item comprehension test, (2) the comprehension score achieved on six sub-tests concerned with assessing different levels of comprehension, and (3) the comprehension scores obtained on the social studies and on the science items of the total reading comprehension test.

Testing the Null Hypotheses

Eleven hypotheses or sets of hypotheses were tested in this investigation. Comparisons were made for each hypothesis between the experimental and the control groups. Several of the hypotheses

required the comparisons of the experimental and control groups following stratification into sub-groups. The order of presentation of the hypotheses in Chapter III is followed in the analysis and presentation of the data here.

The first hypothesis relates to the affect providing stated purposes for reading has on the total reading comprehension score when the experimental group used the Modified Edition of the Reading Comprehension Test and the control group used the Regular Edition of the Reading Comprehension Test. The null hypothesis is:

1. There is no difference between the overall mean scores of the experimental group and the control group.

Table 6 presents the data relative to hypothesis one. This table like all those that follow in this chapter includes the number of subjects in each group, group means, analysis of variance, F-ratios, and indication of any statistically significant difference in mean scores on the total Reading Comprehension Tests.

The F-ratio obtained on the overall mean scores for the total experimental and control groups is not significant. There was no significant difference between the mean score achieved by the experimental group which was provided stated purposes for reading and the mean score achieved by the control group which received no stated purposes prior to reading, therefore, the null hypothesis cannot be rejected.

The treatment groups were stratified by past achievement scores to test the second set of hypotheses.

2. There is no difference between the overall mean scores of the experimental group and the control group when the subjects are subgrouped by past achievement scores.

TABLE 6

ANALYSIS OF VARIANCE FOR THE OVERALL MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS ON THE TOTAL READING COMPREHENSION TEST

Group	N	Mean	Source	d.f.	SS	MS	F
Experimental Group	415	41.52	Between Groups	1	6.19	6.20	.05
Control Group	382	41.70		795	92,451.68	.68	
			Total	796	92,457.87		

a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.

b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.

c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.

The data relative to the second hypothesis were presented in Table 7. The F-ratios obtained for each of the three stratified comparisons are not significant at the .05 level. Null hypothesis two is supported by the data.

The two groups were stratified by non-verbal I.Q. scores to test the third set of hypotheses.

3. There is no difference between the overall mean scores of the experimental group and the control group when the subjects are subgrouped by non-verbal I.Q. scores.

   a. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.

   b. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

   c. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

TABLE 7

ANALYSIS OF VARIANCE FOR OVERALL MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY PAST ACHIEVEMENT SCORES

Group	N	Mean	Source	d.f.	SS	MS	F
High Achievement Group			Between Groups	1	3.19	3.19	.10
Experimental	131	50.69	Within Groups	247	8,155.56	35.02	
Control	118	50.46	Total	248	8,158.75		
Middle Achievement Group			Between Groups	1	4.50	4.50	.07
Experimental	148	42.61	Within Groups	275	16,844.81	61.25	
Control	129	42.36	Total	276	16,849.31		
Low Achievement Group			Between Groups	1	162.06	162.06	1.91
Experimental	132	31.27	Within Groups	260	22,071.25	84.89	
Control	130	32.85	Total	261	22,233.31		

Table 8 presents data relative to the third set of hypotheses. The F-ratios obtained in the comparisons, however, indicate no significance at the .05 level. The third null hypothesis is supported. There is no significant difference between the experimental and control groups when stratified by non-verbal I.Q. score.

The next six sets of hypotheses relate to the effect providing stated purposes for reading has on the six defined levels of reading comprehension. In each of these tests, the subjects have been stratified first by past achievement scores and then by non-verbal I.A. scores.

4. On the Story Context subtest there is no difference between the mean scores of the experimental group and the control group.
    a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.
    b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.
    c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.
    d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.
    e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

TABLE 8

ANALYSIS OF VARIANCE FOR OVERALL MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY NON-VERBAL I.Q. SCORES

Group	N	Mean	Source	d.f.	SS	MS	F
High I.Q. Group			Between Groups	1	6.56	6.56	.10
Experimental	136	47.68	Within Groups	258	16,428.31	63.68	
Control	124	47.35	Total	259	16,434.87		
Middle I.Q. Group			Between Groups	1	1.36	1.36	1.66
Experimental	134	42.28	Within Groups	269	22,090.06	82.12	
Control	137	43.70	Total	270	22,091.42		
Low I.Q. Group			Between Groups	1	153.75	153.75	1.37
Experimental	137	33.36	Within Groups	253	28,326.75	111.96	
Control	118	34.92	Total	254	28,480.50		

f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

The data for the fourth set of hypotheses is provided in Tables 9 and 10. Table 9 presents the data for hypotheses 4a, 4b and 4c. Table 10 presents the data for hypotheses 4d, 4e and 4f.

Table 9 indicates that children in the experimental group achieved higher mean scores on the Story Context subtest in the high and middle achievement groups. There is no significant difference between the performance of the experimental and control groups, however. The F-ratio for the comparison of the low achievement group was significant at the .05 level favoring the control group.

The data in Table 10 indicate that although the experimental groups achieved slightly higher mean scores on all three stratas of non-verbal I.Q., none of the F-ratios indicates a significant difference between the mean scores of the experimental and control groups.

Null hypotheses 4a, b, d, e, and f are supported by the data in Tables 9 and 10. Hypothesis 4c must be rejected. The low achievement level of the control group scored significantly higher than the low achievement level experimental group on the Story Context subtest.

5. On the Re-State Material subtest there is no difference between the mean scores of the experimental group and the control group.

   a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.

TABLE 9

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY PAST ACHIEVEMENT ON THE STORY CONTEXT SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High Achievement Group			Between Groups	1	.04	.04	.04
Experimental	131	11.45	Within Groups	247	227.48	.92	
Control	118	11.43	Total	248	227.52		
Middle Achievement Group			Between Groups	1	1.56	1.56	.45
Experimental	148	10.34	Within Groups	275	943.59	3.43	
Control	129	10.19	Total	276	945.15		
Low Achievement Group			Between Groups	1	26.99	26.99	3.90*
Experimental	132	7.7	Within Groups	260	1,802.46	6.93	
Control	130	8.3	Total	261	1,839.45		

*Significant at the .05 level.

TABLE 10

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY NON-VERBAL I.Q. ON THE STORY CONTEXT SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High I.Q. Group			Between Groups	1	1.32	1.32	.69
Experimental	136	10.98	Within Groups	258	488.13	1.89	
Control	124	11.12	Total	259	489.45		
Middle I.Q. Group			Between Groups	1	1.80	1.80	.45
Experimental	134	10.21	Within Groups	269	1,062.17	3.95	
Control	137	10.37	Total	270	1,063.97		
Low I.Q. Group			Between Groups	1	3.68	3.68	.47
Experimental	137	8.23	Within Groups	253	1,963.95	7.76	
Control	118	8.47	Total	254	1,967.63		

b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.

c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.

d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.

e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

Tables 11 and 12 present the data relating to the fifth set of hypotheses. The data for hypotheses 5a, 5b and 5c is provided in Table 11; and, the data for hypotheses 5d, 5e and 5f is contained in Table 12.

The data in Table 11 reveal only slight differences in the mean scores achieved by the two groups on any of the three levels. The F-ratios indicate that no significant differences exist between the experimental and control groups on the Restate Material subtest.

The F-ratios in Table 12 indicate no significant differences between the performance of the experimental and control groups on the Re-state Material sub-test when the subjects are stratified by non-verbal I.Q. The middle I.Q. level of the control group achieved a

TABLE 11

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY PAST ACHIEVEMENT ON THE RE-STATE MATERIAL SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High Achievement Group			Between Groups	1		1.52	.57
Experimental	131	9.43	Within Groups	247	657.39	2.66	
Control	118	9.27	Total	248	658.91		
Middle Achievement Group			Between Groups	1	1.36	1.36	.34
Experimental	148	7.73	Within Groups	275	1,108.42	4.03	
Control	129	7.59	Total	276	1,109.68		
Low Achievement Group			Between Groups	1	.34	.34	.08
Experimental	132	5.56	Within Groups	260	1,095.24	4.21	
Control	130	5.73	Total	261	1,095.58		

TABLE 12

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY NON-VERBAL I.Q. ON THE RE-STATE MATERIAL SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High I.Q. Group			Between Groups	1	2.56	2.56	.63
Experimental	136	8.78	Within Groups	258	1,053.58	4.08	
Control	124	8.58	Total	259	1,056.14		
Middle I.Q. Group			Between Groups	1	12.63	12.63	2.87
Experimental	134	7.61	Within Groups	269	1,183.56	4.40	
Control	137	8.04	Total	270	1,196.19		
Low I.Q. Group			Between Groups	1	.71	.71	.12
Experimental	137	6.03	Within Groups	253	1,415.72	5.60	
Control	118	6.14	Total	254	1,416.43		

higher mean score than that the experimental group, but it was not significant at the .05 level of confidence.

The data presented in Tables 11 and 12 support the fifth set of null hypotheses. There is no significant difference between the performance of the experimental and control groups on the Re-state Material subtest when stratified by past achievement and then by non-verbal I.Q.

6. On the Sequence and Summarize subtest there is no difference between the mean scores of the experimental group and the control group.
   a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.
   b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.
   c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.
   d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.
   e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.
   f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

Tables 13 and 14 present the data relative to the sixth set of hypotheses. Table 13 deals with the comparison of groups stratified by past achievement and Table 14 presents the data for the groups stratified by non-verbal I.Q. scores.

The data from Table 13 indicate that although the control group scored higher on all three achievement levels there were no significant differences between the experimental and control groups. Table 14 likewise reveals no F-ratios significant at the .05 level. The sixth set of null hypotheses are supported by the data in Tables 13 and 14. There are no significant differences between the groups on the Sequence and Summarize subtest.

7. On the Draw Inferences subtest there is no difference between the mean scores of the experimental group and the control group.
   a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.
   b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.
   c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.
   d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.

TABLE 13

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY PAST ACHIEVEMENT ON THE SEQUENCE AND SUMMARIZE SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High Achievement Group			Between Groups	1	.57	.57	.37
Experimental	131	5.18	Within Groups	247	385.38	1.56	
Control	118	5.28	Total	248	385.95		
Middle Achievement Group			Between Groups	1	2.63	2.63	1.27
Experimental	148	4.11	Within Groups	275	566.65	2.06	
Control	129	4.31	Total	276	569.28		
Low Achievement Group			Between Groups	1	.12	.12	.05
Experimental	132	3.25	Within Groups	260	557.64	2.14	
Control	130	3.29	Total	267	557.76		

TABLE 14

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY NON-VERBAL I.Q. ON THE SEQUENCE AND SUMMARIZE SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High I.Q. Group			Between Groups	1	2.93	.29	.15
Experimental	136	4.97	Within Groups	258	520.72	2.02	
Control	124	4.90	Total	259	523.65		
Middle I.Q. Group			Between Groups	1	.0	.0	.0
Experimental	134	4.31	Within Groups	269	550.34	2.05	
Control	137	4.31	Total	270	550.34		
Low I.Q. Group			Between Groups	1	4.66	4.66	1.93
Experimental	137	3.26	Within Groups	253	611.91	2.42	
Control	118	3.53	Total	254	616.57		

e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

The data relating to the seventh set of hypotheses was presented in Tables 15 and 16. Table 15 indicates that the high and middle achievement levels of the experimental group achieved higher means and that the low achievement level control group attained the highest mean on the Draw Inferences sub-test. The F-ratios indicate that no significant differences exist between the two groups at any of the three levels of comparison.

Table 16 presents F-ratios which indicate that there are no significant differences between the two groups at any of the three levels when the subjects are stratified by non-verbal I.Q. The sixth set of null hypotheses are supported by the data in Tables 15 and 16.

8. On the Apply to New Situations subtest there is no difference between the mean scores of the experimental group and the control group.

   a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.

   b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.

TABLE 15

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY PAST ACHIEVEMENT ON THE DRAW INFERENCES SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High Achievement Group			Between Groups	1	.39	.39	.23
Experimental	131	9.43	Within Groups	247	426.82	1.73	
Control	118	9.35	Total	248	427.21		
Middle Achievement Group			Between Groups	1	1.86	1.86	.48
Experimental	148	8.15	Within Groups	275	1,070.70	3.89	
Control	129	7.98	Total	276	1,072.56		
Low Achievement Group			Between Groups	1	5.86	5.86	1.26
Experimental	132	5.93	Within Groups	260	1,209.46	4.65	
Control	130	6.23	Total	261	1,215.32		

TABLE 16

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY NON-VERBAL I.Q. ON THE DRAW INFERENCES SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High I.Q. Group			Between Groups	1	2.61	2.61	.86
Experimental	136	8.93	Within Groups	258	7,739.49	3.00	
Control	124	8.73	Total	259	7,742.10		
Middle I.Q. Group			Between Groups	1	5.45	5.45	1.29
Experimental	134	8.04	Within Groups	269	1,138.69	4.23	
Control	137	8.32	Total	270	1,144.14		
Low I.Q. Group			Between Groups	1	5.80	5.80	1.04
Experimental	137	6.60	Within Groups	253	1,417.01	5.60	
Control	118	6.30	Total	254	1,422.81		

c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.

d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.

e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

Tables 17 and 18 present the data relating to the ninth set of hypotheses. Table 17 indicates that although the control group had higher mean scores on all three achievement levels, there were no significant differences between the groups. Table 18 reveals a similar set of results.

The ninth set of null hypotheses are confirmed by the data in Tables 17 and 18. There is no significant difference between the experimental and control groups on any of the levels of comparison in the New Situations subtest.

9. On the Logical Relationships subtest there is no difference between the mean scores of the experimental group and the control group.

a. For the high achievement group there is no difference between the mean scores of the experimental group and the control group.

TABLE 17

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY PAST ACHIEVEMENT ON THE APPLY TO NEW SITUATIONS SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High Achievement Group			Between Groups	1	.02	.02	.02
Experimental	131	5.14	Within Groups	247	188.78	.76	
Control	118	5.15	Total	248	188.80		
Middle Achievement Group			Between Groups	1	1.34	1.34	1.09
Experimental	148	4.42	Within Groups	275	337.84	1.23	
Control	129	4.56	Total	276	339.18		
Low Achievement Group			Between Groups	1	.32	.32	.15
Experimental	132	3.52	Within Groups	260	552.54	2.15	
Control	130	3.58	Total	261	552.86		

TABLE 18

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY NON-VERBAL I.Q. ON THE APPLY TO NEW SITUATIONS SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High I.Q. Group			Between Groups	1	.88	.88	.91
Experimental	136	4.88	Within Groups	258	249.87	.96	
Control	124	4.99	Total	259	250.75		
Middle I.Q. Group			Between Groups	1	.0	.0	.0
Experimental	134	4.49	Within Groups	269	443.71	1.65	
Control	137	4.49	Total	270	443.71		
Low I.Q. Group			Between Groups	1	.18	.18	.09
Experimental	137	3.70	Within Groups	253	512.69	2.03	
Control	118	3.75	Total	254	512.78		

b. For the middle achievement group there is no difference between the mean scores of the experimental group and the control group.

c. For the low achievement group there is no difference between the mean scores of the experimental group and the control group.

d. For the high I.Q. group there is no difference between the mean scores of the experimental group and the control group.

e. For the middle I.Q. group there is no difference between the mean scores of the experimental group and the control group.

f. For the low I.Q. group there is no difference between the mean scores of the experimental group and the control group.

The data for the tenth set of hypotheses was contained in Tables 19 and 20. The F-ratios in Table 19 reveal that no significant differences exist between the mean scores.

The tenth set of null hypotheses are supported by the data in Tables 19 and 20. There are no significant differences between the experimental and the control groups on the Logical Relationships subtest.

Tne last two hypotheses deal with the effect providing stated purposes for reading has on the comprehension scores of the subjects in the content areas of social studies and science.

10. On the Social Studies subtest there is no difference between the mean scores of the experimental group and the control group.

TABLE 19

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY PAST ACHIEVEMENT ON THE LOGICAL RELATIONSHIPS SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High Achievement Group			Between Groups	1	.38	.38	.09
Experimental	131	10.05	Within Groups	247	1,017.55	4.12	
Control	118	9.97	Total	248	1,017.93		
Middle Achievement Group			Between Groups	1	1.29	1.29	.24
Experimental	148	7.86	Within Groups	275	1,477.98	5.37	
Control	129	7.72	Total	276	1,479.27		
Low Achievement Group			Between Groups	1	13.20	13.20	2.37
Experimental	132	5.19	Within Groups	260	1,448.28	5.57	
Control	130	5.63	Total	261	1,461.48		

TABLE 20

ANALYSIS OF VARIANCE FOR THE MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS WHEN STRATIFIED BY NON-VERBAL I.Q. ON THE LOGICAL RELATIONSHIPS SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
High I.Q. Group			Between Groups	1	.85	.85	.12
Experimental	136	9.15	Within Groups	258	1,810.93	7.02	
Control	124	9.03	Total	259	1,811.78		
Middle I.Q. Group			Between Groups	1	19.30	19.30	2.77
Experimental	134	7.63	Within Groups	269	1,873.81	6.97	
Control	137	8.16	Total	270	1,893.11		
Low I.Q. Group			Between Groups	1	21.55	21.55	3.09
Experimental	137	5.83	Within Groups	253	1,765.80	6.98	
Control	118	6.42	Total	254	1,787.35		

Table 21 provides the data relative to hypothesis ten. The data indicate that although the total experimental group scored a slightly higher mean score than the total control group, the F-ratio indicates no significant difference. The tenth null hypothesis is confirmed by the data. Providing stated purposes for reading did not result in a higher reading comprehension score on social studies type questions.

The eleventh and final hypothesis was:

11. On the Science subtest there is no difference between the mean scores of the experimental group and the control group.

The data pertaining to the eleventh hypothesis are provided in Table 22. The F-ratio indicates no significant difference between the experimental and control groups. Null hypothesis eleven is confirmed. Reading comprehension scores on science-type questions are not affected by the provision of stated purposes for reading.

The amount of time consumed to complete the tests was a subject of interest in this investigation. It was anticipated that the subects in the experimental group would require more time to complete the test because of the stated purposes which were provided. Table 23 indicates that there was no significant difference in the mean total time consumed by the experimental and control groups.

Summary of Findings

Table 24 presents the F-values derived by analysis of variance for each hypothesis.

TABLE 21

ANALYSIS OF VARIANCE FOR MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS ON THE SOCIAL STUDIES SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
Experimental Group	415	9.68	Between Groups	1	11.66	11.66	.97
Control Group	382	9.44	Within Groups	795	9,510.13		
				796	9,521.79		

TABLE 22

ANALYSIS OF VARIANCE FOR MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS ON THE SCIENCE SUB-TEST

Group	N	Mean	Source	d.f.	SS	MS	F
Experimental Group	415	10.50	Between Groups	1	2.46	2.46	.21
Control Group	382	10.61	Within Groups	795	9,124.63	11.48	
			Total	796	9,127.09		

TABLE 23

ANALYSIS OF VARIANCE FOR MEAN TOTAL TIME OF THE EXPERIMENTAL AND CONTROL GROUPS ON THE NUMBER OF MINUTES USED TO COMPLETE THE TESTS

Group	N	Mean	Source	d.f.	SS	MS	F
Experimental Group	415	33.82	Between Groups	1	69.55	69.55	.75
Control Group	382	33.23	Within Groups	795	73,847.00	92.89	
			Total	796	73,916.00		

TABLE 24

F-VALUES DERIVED BY ANALYSIS OF VARIANCE FOR EACH HYPOTHESIS

	Total Sample	High Ach	Mid Ach	Low Ach	High IQ	Mid IQ	Low IQ
Hypothesis One	.05						
Hypothesis Two		.10	.07	1.91			
Hypothesis Three					.10	1.66	1.37
Hypothesis Four		.04	.45	3.90*	.69	.45	.47
Hypothesis Five		.57	.34	.08	.63	2.87	.12
Hypothesis Six		.37	1.27	.05	.15	.00	1.93
Hypothesis Seven		.23	.48	1.26	.86	1.29	1.04
Hypothesis Eight		.02	1.09	.15	.91	.00	.09
Hypothesis Nine		.09	.24	2.37	.12	2.77	3.09
Hypothesis Ten	.97						
Hypothesis Eleven	.21						

*Hypothesis rejected

The findings of this investigation are summarized by the following statements:

1. Hypothesis 4c is the only hypothesis which was not supported by the data and was therefore rejected.

2. Providing stated purposes for reading had no significant effect on mean comprehension scores achieved by the experimental group.

3. Providing stated purposes for reading had no significant effect on the mean comprehension scores at five of the six defined levels of reading comprehension. On the Story Context level there was a significant difference between low achievement groups with the control group scoring significantly higher than the experimental group.

4. Providing stated purposes for reading had no significant effect on the mean comprehension scores of the high, middle or low groups when stratified by past achievement scores or by non-verbal I.Q. scores.

5. Providing stated purposes for reading had no significant effect on the mean comprehension scores of the subjects on social studies and science-type questions.

6. Providing stated purposes for reading had no significant effect on the mean total time consumed by the experimental group.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary of the Investigation

Purpose of the Investigation

The purpose of this investigation was to study the performance of fifth grade students on reading comprehension tasks under two conditions: (1) when stated purposes for reading were provided prior to reading, and (2) when stated purposes were not provided prior to reading. A second purpose of the investigation was to determine whether the affect of providing purposes for reading is different at various cognitive levels.

Summary of the Procedures

The sample for this investigation was comprised of students enrolled in the thirty-two fifth grade classrooms of Independent School District #191, Burnsville, Minnesota. The subjects were assigned by classroom unit to the experimental or control group by a random selection process. The 797 subjects included in this investigation were assigned as follows: 415 in the experimental group and 382 in the control group.

The test instruments designed for use in this study were administered to all subjects at 9:00 a.m. on May 3, 1973. The Reading Comprehension Test from the SRA Achievement Series was employed in two different formats in this investigation. The Regular Edition was

reproduced in a format very similar to its original form. The Modified Edition was reproduced with the inclusion of stated purposes for reading prior to each of the six reading selections in the test. The Modified Edition was administered to the experimental group, and the Regular Edition was administered to the control group. The test administration was performed by the subjects' regular classroom teacher according to a script provided by the investigator. All subjects were allowed up to 60 minutes to complete the 60 item test.

The testing procedure provided a total reading comprehension score for each subject. Sub-test scores for the following levels of comprehension were derived: Story Context, Re-state Material, Sequence and Summarize, Draw Inferences, Apply to New Situations and Logical Relationships. The test instruments also yielded scores for the social studies-type comprehension questions and science-type comprehension questions.

The analysis of the data involved the use of a one-way analysis of variance. To test the eleven sets of null hypotheses, comparisons were made of the mean scores achieved by the subjects in the two groups. The comparisons included performance of each group on the total comprehension test, on each of the levels of comprehension, on the social studies and science-type comprehension scores, and on the performance of each group when stratified into high, middle and low groups by past achievement scores and by non-verbal I.Q. scores.

Summary of the Limitations

This investigation was conducted in a midwestern, suburban school district. The findings of this study are not necessarily

applicable to students of other geographic areas. A second limitation concerns the test instruments used to solicit student responses. Although there was information available regarding the standardization of the original form of the Reading Comprehension Test, similar information was not available regarding the modified forms designed for this study. The defined levels of comprehension may serve as a third limitation. Due to the variety of levels of comprehension included in many lists, conclusions regarding this aspect of the study are limited to the six levels as defined for this study. This investigation was limited to a testing situation, therefore, the findings may not apply to a regular classroom instructional setting.

Summary of the Findings

Subject to the limitations identified earlier, the findings of the investigation are presented in the following statements.

1. Providing stated purposes for reading had no significant effect on the overall reading comprehension scores. The subjects who read without stated purposes scored at approximately the same level as those who had been given purposes.

2. Student performance at the six levels of comprehension defined for this study was unaffected by providing stated purposes for reading with one exception. A comparison of the two groups stratified by past achievement resulted in a significant difference between the low achieving experimental group and the low achieving control group on the Story Context level of comprehension. The group that read without stated purposes scored significantly higher than the group with the purposes.

3. Providing stated purposes for reading had no significant affect on comprehension when subjects were stratified by past achievement scores.

4. The performance of students stratified by non-verbal I.Q. scores was not affected by the provision of stated purposes for reading.

5. The social studies and science comprehension scores were not significantly affected by the provision of stated purposes.

6. There was no significant difference between groups in the amount of time consumed to take the test. The subjects with stated purposes completed the test just as rapidly as the subjects who had no stated purposes.

Discussion

One would expect the findings of this study to indicate that the subjects with stated purposes scored significantly higher than the subjects who had not been provided the purposes for reading. The practice of providing stated purposes is well established as a valuable strategy for assisting young students in the development of their comprehension skills. The review of the literature revealed many authorities strongly recommending the practice, the authors of basal reading series for elementary age students include purposes for reading in their instructional materials and much of the research performed on purposes found them to be of assistance to students. The literature in Chapter II also suggests that there are specific comprehension skills which could be evaluated using the methods employed in this investigation.

An examination of the data provided by this study raises a number of questions which should be considered before any conclusions are drawn regarding the questions investigated.

The first question which must be asked deals with the purposes which were provided the subjects in the experimental group for this investigation. Did the purposes provided prior to each reading selection parallel the level of questions asked following each selection? A concerted effort was made to formulate the directions so that there was a similarity between the directions given and the questions asked. The directions were also stated in a manner familiar to the subjects as evidenced in the basal reading series used by the subjects. It was the investigator's judgment that the directions were parallel to the questions asked and were stated in a manner familiar to the subjects. If this were not the case, however, the results may be biased accordingly.

A second question to be considered is, "Did the subjects actually read the directions before they read the selections and answered the questions?" One bit of evidence which would help to answer this question is the amount of time consumed by the two groups in taking the test. It can be assumed that the subjects who were asked to read the directions prior to reading the selections would require more time than those who were not asked to read the directions. The time required by the two groups is nearly identical. The mean total time used by the experimental group was 33.82 minutes and 33.23 minutes for the control group. This difference is not significant. This finding could lead one to speculate that the subjects spent little or no time reading the directions.

Another consideration is the familiarity of the subjects with stated purposes for reading. Did the subjects have previous experience in using stated purposes for reading? Even though the basal reading

series used by the subjects provides directions for reading which include purposes, it is possible that no concerted effort had been made during classroom instruction to teach children to read for different purposes.

One of the authorities (Stauffer, 1969a) maintains that students do set their own purposes for reading. Are purposes determined by students so strong that teacher determined purposes are rendered ineffective? Assuming that students do set their own purposes for reading, one could speculate that those purposes outweighed the purposes provided as a part of this study. Had this study included a third treatment group, in which the subjects were asked to list their purposes for reading the test selections, the question of the affect of student purposes might have been answered.

The reading selections used in test instruments are another matter for consideration. Was the reading material of sufficient interest to the subjects to facilitate comprehension? Could the real differences be masked by lack of student interest or inadequate student background? It has been suggested by some reading authorities that the interest level of the student has a significant effect on the meaning he takes from material read. The interest level of the material used in test instruments may be appropriate for purposes of a nationally-normed achievement test, but not of sufficient interest to the subjects to reveal differences in this investigation.

The attitude of the teachers who administered the test instruments should also be considered. A review of the time used to take the tests indicates that the subjects in some classes completed the tests very quickly, while in other classes of comparable ability and past achievement the students took considerably longer. The directions

provided each subject indicated that they could go back over the test once they had finished. They were also told that they could reread to find answers. To what degree does the teacher's attitude toward this test situation, or any test situation, affect the performance of the students? While the general attitude toward this study seemed to be very supportive, do teachers help to establish an attitude within the classroom which puts a premium on completing tasks rapidly? If so, did rapid work affect student performance in this investigation?

The size of the sample used in this investigation presents another consideration. Would a case study approach to the question of student comprehension have been more appropriate? The present study provides a considerable amount of information regarding trends for a large sample. However it would be impossible to know each of the 797 subjects thoroughly, to investigate their scholastic backgrounds, to determine their interests or to observe each of them as they attack a challenge.

Conclusions

This investigation has provided evidence which supports the following conclusions, subject to the limitations of the investigation:

1. Providing students with stated purposes for reading does not improve their comprehension of material read. The findings indicate that the subjects who read without stated purposes and those who had stated purposes provided performed equally well on a test of reading comprehension.

2. Providing stated purposes for reading does not appear to be an effective strategy at any of the six levels of comprehension.

The experimental and the control group subjects achieved comparable scores on each of the six sub-scales.

3. Providing stated purposes for reading was not of special assistance to students in any of the high, middle or low achievement or ability groups. The subjects in the control group scored as high in all of those comparisons, and in one case, they scored significantly higher than the experimental group.

4. Providing stated purposes for reading does not increase the achievement level of students on social studies or science-type comprehension material. The subjects in both the control and the experimental groups scored equally well on those two sub-tests.

Educational Implications

The findings of this investigation do not support the practice of providing stated purposes for reading as a method of assisting students in the development of comprehension skills. Although additional research is needed on this question before a recommendation could be made that a classroom practice of such long standing can be discarded, this investigation and other related studies seriously question the value of teacher-determined purposes for reading by students.

This study suggests that teachers, reading specialists, school administrators and researchers re-examine the type and level of directions given students. It is possible that the directions given are repetitious to the point that students may disregard them, proceeding to perform tasks in much the same manner as they have done many times in the past.

Authorities cited in Chapter II suggest that students need guidance in the development of their comprehension skills and in learning to

read for different purposes. These same authorities stated that students might best develop their comprehension skills while reading in the content areas, such as social studies and science. The social studies and science questions in this investigation used every level of comprehension except one (Story Context).

Educators are called upon to evaluate the strategies they employ, the setting in which they work and the materials they use in comparison to the needs of the individual students to whom they are responsible. They must often rely on the opinions and recommendations of authorities regarding the most effective means of guiding students in skill development. The findings of this study cause one to seriously question a highly recommended, commonly employed instructional practice. Are there teaching strategies being recommended and used in classrooms that should be evaluated?

Recommendations for Further Study

The need for additional study of the questions considered by this investigation has been suggested in the preceding sections. In addition, several related questions in need of study have been identified.

Research might test the hypothesis that when a student has had designed experiences in identifying and using the various levels of comprehension he will comprehend at a higher level.

The type of test used to solicit data from students may have an effect on the findings in studies such as this one. In this study, the subjects in the experimental group were asked to read a set of directions, read a selection, and then answer ten questions regarding

the material read. Would the results be the same if a student read a set of directions, read a very short selection, and then answer two or three questions which are closely correlated to the directions given? If it was found that shorter selections with fewer questions was more effective, modifications in both classroom practice and test construction could result.

The review of literature revealed a variety of findings relative to directed reading. It appears that directed reading or providing stated purposes for reading has been of benefit to older, more mature readers of high school and college age. A longitudinal study of the effects of directed reading, beginning with early readers and continuing through college would be of value to educators.

The literature also suggests that students are helped by learning to establish their own purposes for reading. A study designed to compare the effects of student determined purposes to teacher established purposes at several maturity levels would prove enlightening.

APPENDIX A

A LETTER OF INVITATION TO TEST EXAMINERS

TO: Fifth Grade Teachers
Elementary Principals
Helping Teachers

FROM: Larry M. Brady Principal
Gideon Pond Elementary School

RE: Reading Comprehension Test

DATE: April 24, 1973

I need your assistance for the administration of a reading comprehension test to all fifth grade students in the District. The test is a part of the study we are conducting on methods of reading instruction. The results of these tests will be of great value to me as I work on my dissertation, but they should also be of value to the sixth grade teachers next fall and to you as you work with your students in the future.

We hope to give the test at 9:00 on the morning of Thursday, May 3rd. The total time involved in the administration of the test is about one hour and fifteen minutes. It is important that all of the students be tested on the same day, at the same time. I would, therefore, ask if you could make arrangements in your schedule so that you could test at 9:00 on Thursday. I regret the inconvenience that this may cause you, your students, and other staff members. I hope that the benefits of this study will warrant the inconvenience caused at this time.

You are invited to attend a very brief test administrators' meeting at Gideon Pond School at 3:30 on Tuesday, May 1st. I will have all of the necessary materials available for you at the meeting. Should you find it necessary to be absent on Thursday, May 3rd, your principal will administer the test for you. In the event that you are unable to attend the Tuesday meeting, please call me at 890-4550, and I will come to your building to see you.

APPENDIX B

THE EXAMINER'S MANUAL FOR THE REGULAR EDITION OF THE READING COMPREHENSION TEST

EXAMINER'S MANUAL

ADMINISTERING THE READING TEST

This manual presents the standard procedures for administering this reading test. Teachers who will administer the test should read this manual carefully to gain familiarity with the testing procedures.

It is important that all directions be followed exactly. Only when the tests are administered under uniform conditions can results be used with confidence. Only when this uniformity is maintained for the entire group will the students' scores be comparable.

Study each step in this manual carefully, so that there will be no hesitation in administration. It is desirable that the examiner take the test himself before administering it. If this is not possible, he should read through the test so that he will be familiar with the items.

MATERIALS NEEDED FOR TESTING

Test Booklets

You will need one manual for each examiner; if a large group is being tested, you will need one additional copy for each proctor.

Pencils and Erasers

Instruct the students in advance to come to the test session with two lead pencils and an eraser. You should have a liberal supply of extra pencils to give to students who have not brought their own and to replace those that need sharpening during the testing period. Marks made with pencils will allow students to erase answers if they find need to do so.

Timer

The time required for each student to complete the test must be recorded. An interval timer is best for this purpose, although a stopwatch or a wall clock can be used.

Reading Material

Study materials or books of general interest should be available for students who finish the tests early.

THE TESTING ROOM

Arrange for desk or table space so that each student has room for an open 8½ x 11" test booklet.

The testing room should be quiet, well lighted, and well ventilated. If possible, arrange to test in a room that does not face a playground. Make preparations in advance to reduce recess noises and to keep messengers from entering the testing room. Put a sign on the classroom door that reads "Testing in Progress - Do Not Disturb."

During the testing the students should be separated as much as the seating arrangement of the room will allow. A seating arrangement that discourages copying is much more successful than warning students not to copy.

SIZE OF GROUP AND NUMBER OF PROCTORS

If you are administering the tests to a large group, you will require the assistance of one adult proctor for every 30 students beyond the first 30. Make arrangements in advance with each proctor regarding the section of the room he is to supervise, and go over with him the methods that will be used. Each proctor should read this manual before the testing session.

TIMING THE TEST

These tests emphasize power rather than speed; the time limits are quite generous. All students may have finished before time limits are reached. If everyone has finished, you should call time at once. It is important, however, that full time be allowed even if only two or three students are still working. These slower workers will often be competent and careful students, and they should not be penalized by shortened time limits. You can reduce restlessness among those who finish early by urging them to check their answers and by having general reading materials available.

SCHEDULING THE TEST

The total time required is approximately 1 hour 15 minutes. Actual testing time is 1 hour. Administration time may vary from class to class, but actual testing time must not exceed the specified limits. To aid the examiner in recording the time taken by each student to complete the tests, this manual provides a sheet to record starting and stopping times for each student.

INTRODUCTORY DIRECTIONS TO STUDENTS

(Directions to the examiner are printed with no indentation and should not be read to the students).

> (Directions to the students are indented in this manner and bordered by a vertical bar on the left. The indented sections in quotation marks are quoted directly from the test booklet; the students may read along silently while the examiner reads these sections aloud).

The directions in this section will prepare the student for the test and instruct them in filling in the identifying information on page 2.

Make sure each student has two lead pencils and an eraser. The students should be seated in the desired arrangement and separated as much as possible.

Read all directions slowly and distinctly. Say:

> Today we are going to take a reading test that will help you and your teachers know how well you can remember and use what you have read.

> It is important that you do your best on these tests so that your scores will show clearly your educational strengths and weaknesses.

> The test booklet which I will give you in a moment will provide instructions for marking your answers. You will not be using a separate answer sheet for this test.

> I will now give each of you a test booklet. Leave it on your desk until I tell you what to do with it.

DIRECTIONS FOR COMPLETING THE STUDENT INFORMATION PAGE

Each of the students should complete the second page with little assistance from the test administrator.

| Open your test booklets to page number 2. Write your name on the first line.

Allow time for all students to write their names.

| Write either boy or girl on the second line.

Allow time for all students to indicate sex.

| Write your classroom number_____.

You may want to tell the students a specific room number to indicate if they are being tested in a room other than the room to which they are regularly assigned.

| Write the name of your school on the fourth line.

Allow time for all students to write the school name.

| Write the name of the classroom teacher who keeps a record of your attendance each morning.

You may find it necessary to help students at this point. If they have difficulty determining the correct teacher's name, ask them to leave it blank. The teacher's name can be written in later.

| It will not be necessary for you to complete the other lines on this page.

| Do you have any questions before we begin with the directions for the test?

If there are no student questions, you should begin with the directions on page 3.

DIRECTIONS FOR ADMINISTERING THE READING TEST

Check to see that each student has pencils and an eraser. Then say:

| Open your test booklet to page 3. Read the directions for the Reading test silently while I read them aloud.

READING

| DIRECTIONS: This is a test of how well you understand what you read. The test has stories for you to answer. Read each story; then answer the questions that follow it. Draw a circle around the letter in front of the best answer for each question. Here is an example:

| "Make a wish and blow out the candles!" That's something people have been saying to birthday children for hundreds of years. Long ago, people thought that candles had magic powers. The candles on a birthday cake had the power of granting a wish. To get the wish the birthday child had to blow out all the candles at once and keep the wish a secret. Today, most people don't believe that candles have magic powers, but the custom goes on.

| S1. To get his wish the birthday child had to

A. eat a piece of cake
B. keep the wish a secret

C. say the right magic words
D. find the special birthday candle

S2. In line 4, "at once" means
A. right away
B. one by one
C. at the right time
D. at the same time

The best answer for question S1 is B, "keep the wish a secret," so you should draw a circle around B, "keep the wish a secret." The best answer for question S2 is D, "at the same time." You should draw a circle around D, "at the same time."

Remember to draw a circle around only one answer for each question. You can look back at the story when you are answering the questions. If you wish to change an answer, carefully erase your first answer and then draw a circle around the letter in front of your new answer.

When you are told to begin, work until you finish answering all of the questions."

Take time to answer any questions. Then say:

Begin!

Write the exact time you began testing on the Time Record Sheet on the next page.

Record the time that each of the students completes the test.

At the end of 60 minutes ask the students to:

Stop!

Collect all student test booklets. Place all student booklets and administrator's manuals in the envelopes provided and return to your elementary school office.

TIME RECORD SHEET

Teacher's Name _____

Elementary School _____

	Student Name	Ending Time -	Beginning Time	= Total Test Time
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				

Student Name	Ending Time	- Beginning Time	= Total Test Time
22.			
23.			
24.			
25.			
26.			
27.			
28.			
29.			
30.			
31.			
32.			
33.			
34.			
35.			

APPENDIX C

STUDENT COPY OF THE REGULAR EDITION OF THE READING COMPREHENSION TEST

READING

STUDENT NAME: _____

BOY OR GIRL: _____

CLASSROOM: _____

ELEMENTARY SCHOOL: _____

CLASSROOM TEACHER: _____

_____

_____

_____

_____

SRA ASSESSMENT SURVEY
ACHIEVEMENT SERIES
FORM E BLUE/LEVEL

(Regular Edition)

READING

DIRECTIONS: This is a test of how well you understand what you read. The test has stories for you to read and questions for you to answer. Read each story; then answer the questions that follow it. Draw a circle around the letter in front of the best answer for each question. Here is an example:

"Make a wish and blow out the candles!" That's something people have been saying to birthday children for hundreds of years. Long ago, people thought that candles had magic powers. The candles on a birthday cake had the power of granting a wish. To get the wish the birthday child had to blow out all the candles at once and keep the wish a secret. Today, most people don't believe that candles have magic powers, but the custom goes on.

S1. To get his wish, the birthday child had to
- A. eat a piece of cake
- B. keep the wish a secret
- C. say the right magic words
- D. find the special birthday candle

S2. In line 4, "at once" means
- A. right away
- B. one by one
- C. at the right time
- D. at the same time

The best answer for question S1 is B, "keep the wish a secret," so you should draw a circle around B "keep the wish a secret." The best answer for question S2 is D, "at the same time." You should draw a circle around D, "at the same time."

Remember to draw a circle around only one answer for each question. You can look back at the story when you are answering the questions. If you wish to change an answer, carefully erase your first answer and then draw a circle around the letter in front of your new answer.

When you are told to begin, work until time is called or until you finish answering all of the questions.

Ella was a gigantic green dragon. She had two heads and a row of neat, sharp points on her back. She could breathe flames that shot out ten feet in every direction. But Ella didn't try to frighten anyone. In fact, she had a problem. She liked people.

Ella lived in a cave near the ocean. She was lonely there. So one day she went to a nearby town.

"Would you like to ride the waves?" she asked some townspeople. Most of the people were afraid of Ella. But a few brave boys decided they would try their luck with Ella and the waves. They had a marvelous time, and whenever they saw Ella after that they asked for another ride.

"Can I take you fishing?" Ella asked the town fishermen. With Ella's help they got more fish than every before. Ella just scooped the fish in her mouths and tossed them into the net.

Every day Ella took the men fishing. She took children out for rides. She was not lonely anymore.

Ella began to wonder whether she really was a dragon. She knew dragons weren't supposed to like people. But there was nothing she could do. She hated being lonely.

One day as Ella left her cave to go to the city, she saw a large army of men coming from the north on horses. They were carrying swords and shields. Ella ran to the city and warned the people. Then she went to meet the army. She took a deep breath with each mouth and breathed as hard as she could. Flames shot out in all directions. She breathed fire time and time again.

The approaching men stopped short in terror. Then they turned around and ran. Never again did they try to attack the town. Ella knew that she was a real dragon.

1. What kind of dragon was Ella?

   A. Fierce
   B. Mean
   C. Weak
   D. Friendly

2. In line 8, <u>marvelous</u> means

   A. confusing
   B. wonderful
   C. restful
   D. scary

3. Ella was unhappy at first because she

   A. didn't have any friends
   B. looked funny with two heads
   C. didn't get along with other dragons
   D. had to live in a cave

4. In line 11, "scooped up" means

   A. dipped up
   B. ate up
   C. gulped down
   D. spit out

5. Why did the men from the north come to the town?

   A. To see Ella
   B. To kill the dragon
   C. To go fishing
   D. To capture the town

6. A good title for this story would be

   A. The City Dragon
   B. Fishing with a Dragon
   C. The Dragon That Liked People
   D. All about Dragons

7. From the way the story is told, we know that the author

   A. has met dragons like Ella
   B. understands how Ella feels
   C. thinks Ella is silly
   D. didn't think Ella could scare away the men from the north

8. Why did Ella want to score the approaching army away?

   A. She was afraid of it.
   B. She wanted to see if she was a real dragon.
   C. The army had tried to hurt her.
   D. Her friends were in danger.

9. The first thing Ella did after she warned the townspeople was to

   A. meet the army
   B. take a deep breath
   C. run to the city
   D. scare the men away

10. When Ella met the approaching army, she

   A. swallowed the men who were near her
   B. made it so windy the men could get no closer
   C. made a terrifying noise
   D. made flames shoot out of her mouths

During the Franco-Prussian War the German army surrounded the city of Paris. Food became scarce during the long siege of 1870-71. French scientists tried to find food substitutes to give to the starving people. One scientist, J. B. Dumas, made a synthetic milk by mixing a liquid fat and an albuminous solution. He gave the milk to some children who had no other food. Unfortunately, all these children died of starvation. Apparently the milk lacked some vital element that people need to live. Dumas questioned the wholesomeness of a diet that contained only proteins, carbohydrates, fats, and salts.

In 1905 a Dutch professor, Cornelis Pekelharing, developed a man-made food for laboratory mice. After four weeks of eating only this food, all the mice died. But Pekelharing did not give up. Instead, he tried adding a few drops of whole milk to the food and fed it to another group of mice. This second trial produced healthy, normal mice. It was clear that the missing substance needed for life was required in only very small amounts.

Other scientists continued the search for the missing substance. In 1911 at the Lister Institute, a Polish scientist named Casimir Funk isolated a substance from yeast that cured beriberi. Beriberi is a fatal disease that attacks both men and animals. Funk named the substances he was working on "vitamines." His co-workers didn't like the name, since it implied that the substances came from a particular group of organic compounds called amines. The co-workers thought it was likely that the substances did not all come from this group of compounds. History has proved Funk's colleagues correct. Only one of the vitamins is actually an amine, but the name Funk used has lasted since 1912, although the final e has been dropped.

11. The milk Dumas made probably contained all the following EXCEPT

A. proteins
B. fats
C. vitamins
D. carbohydrates

12. In line 3, synthetic means

A. unreal
B. man-made
C. nourishing
D. fresh-tasting

13. What was the direct cause of Dumas's research?

A. Personal interest of scientists
B. Food poisoning
C. Shortage of food
D. Need for extra food for the army

14. Research on vitamins would be of most interest to

A. doctors
B. fishermen
C. lawyers
D. dentists

15. In line 11, trial means

A. hardship
B. test
C. case in court
D. food

16. The probable cause of the disease beriberi is

A. an airborne virus
B. poisonous foods
C. the lack of some vitamin
D. not enough fat in the diet

17. Which of the following would probably contain NO vitamins?

A. Milk
B. Water
C. Yeast
D. Butter

18. What was probably the reason that the people in Paris were starving?

A. They couldn't live on Dumas's synthetic milk.
B. They were suffering from beriberi.
C. The Germans wouldn't let food into the city.
D. They didn't know that they needed vitamins.

19. Which of the following would be the best title for this story?

A. Man-man Milk
B. The Long Siege
C. Search for a Vital Substance
D. Research on Food

20. According to the story, the Franco-Prussian War must have been going on during which of the following time periods?

A. 1870-71
B. 1905-06
C. 1911-12
D. 1914-18

Mr. Bement was a happy man. He had just sold his farm to a businessman. For more than a year, Mr. Bement had been trying to sell the farm. The worn-out land no longer produced good crops, and Mr. Bement was an old man. But no one had offered to buy his farm until Mr. Welton came along.

Mr. Welton, a businessman, was anxious to buy the land. He had heard that a super-highway might be built between the cities of Brighton and Wellsburg. It would reduce travel time between the farm and Brighton to about forty-five minutes. If the superhighway were built close to farmer Bement's land, the land could become valuable. If the trip to Brighton were shorter, someone might want to build homes on the land. A clear stream wandered through the hilly, wooded land. Men could work in Brighton and live in the country.

Mr. Welton took a risk. He couldn't be sure that the superhighway would be built. He couldn't be sure that anyone would want to build homes on the land. But he borrowed money from the bank and bought the land. Then he waited.

Two years later the superhighway was completed. It passed within a mile of Mr. Welton's land. Six months later Mr. Welton sold the land. He had several offers. Finally he sold it to Mr. Vitello, a builder who planned to erect homes and sell them. Mr. Vitello paid Mr. Welton three times as much money for the land as Mr. Welton had paid the farmer. Mr. Welton made a good profit.

21. Mr. Welton borrowed money to pay

A. for his home
B. Mr. Vitello
C. the bank
D. for the farm

22. Mr. Bement wanted to sell the farm because he

A. had bought a retirement home
B. knew he could no longer work the farm
C. knew someone wanted to buy it
D. wanted a better farm

23. In line 12 of the story, <u>risk</u> means that Mr. Welton

A. was sure he would make money
B. had a good idea
C. could borrow money
D. was taking a chance

24. Which of the following is an example of profit making?

A. A girl spends a nickel for a marble and loses the marble.
B. A girl spends a nickel for a marble and sells it for three cents.
C. A girl spends a nickel for a marble and sells it for a dime.
D. A girl spends a nickel for a marble and sells it for a nickel.

25. What did Mr. Vitello do?

A. He bought land in Brighton.
B. He bought homes and sold them.
C. He bought the land from the farmer.
D. He bought land and erected homes.

26. The main point of the story is that

A. Mr. Bement made a profit
B. the value of land can change
C. small farms have worn-out land
D. people wanted to build homes

27. In the last line of the story, profit means

A. the risk Mr. Welton took
B. the land Mr. Welton bought
C. the money Mr. Welton gained
D. the business Mr. Welton was in

28. What was the first sign that Mr. Welton's risk was a good one?

A. The superhighway was built.
B. Mr. Vitello bought the land.
C. Mr. Bement sold his farm.
D. The farm had hills, water, and trees.

29. Which of the following is an example of risk taking?

A. A boy puts money in a piggy bank to save for a new bike.
B. A boy opens a savings account at the local bank.
C. A boy puts money in his wallet.
D. A boy buys stamps for his collection, hoping their value will increase.

30. The value of the farmland increased because a

A. good businessman bought it
B. superhighway was built nearby
C. lot of homes were built on it
D. lot of money was spent on it

"I heard you have two women locked up," commented the reporter from the Clarion. "What's the charge?"

"Assault and battery," replied the sheriff. "One is a Mrs. Smith and the other a Mrs. Jones. They've been cooling their heels since three o'clock. Their lawyers are on their way here now to post bail."

"What happened?" asked the reporter.

"Well, Flit's Department Store held their Dollar Sale today. Since it was raining, the umbrella department was really crowded. The ladies started a tug-of-war over a purple umbrella. That's it over there on the table. It'll be exhibit A at the trial. Each lady claims she saw it first. Smith says Jones hit her on the arm with the umbrella. Jones is singing a different tune. She says Smith gave her a belt on the head with a bag of hard candy. The candy will be exhibit B. When a salesman tried to stop the fight, they let him have it. He'll be out of the hospital in a week."

The sheriff leaned back, yawned, and looked at the clock. "It's five o'clock. Deputy Slat will be coming on duty. I'll wait until tomorrow to mark those exhibits."

A tall young man swaggered into the room a few minutes later. He drew two imaginery six-guns and growled, "My name is Wild Bill Hickok. I'm here to take the night watch."

"Your name will be mud if you don't finish that report on your desk," said the sheriff. "I'll see you tomorrow."

"You can always depend on Wild Bill," replied Slat as the sheriff and the reporter walked out the door.

He sat down and began to work. I could eat a bear, he said to himself, and glanced around the room. Hey, what's that over there? He walked over to the table and filled his mouth with candy. Loud cracks filled the room. Ummm good. I'll eat the rest of it while I work. And here's an umbrella. That will come in handy when I go home. The sheriff won't mind if I take it--it's all torn up anyhow.

31. The story takes place in a

A. courtroom
B. newspaper office
C. department store
D. county jail

32. Mrs. Smith and Mrs. Jones could best be described as

A. thoughtful
B. violent
C. jealous
D. innocent

33. The next time the salesman sees two people having a fight, he will probably

A. refuse to get involved
B. try to pull the fighters apart
C. explain to them why they shouldn't fight
D. call a reporter

34. When the sheriff says "Jones is singing a different tune," he means that she is

A. telling another side of the story
B. screaming for her lawyer
C. agreeing with Mrs. Smith
D. singing an unusual song

35. Why is the sheriff really to blame for what Slat did?

A. He shouldn't have gone so early.
B. He should not have allowed Slat to be alone on duty.
C. He knew that Slat was always hungry.
D. He didn't mark the umbrella and candy as exhibits.

36. In line 11, <u>belt</u> means a

A. strip of leather
B. safety strap
C. blow
D. song

37. Who has the most reason to sue Mrs. Smith and Mrs. Jones?

A. The owner of Flit's Department Store
B. The salesman
C. The sheriff
D. The reporter from the Clarion

38. Deputy Slat was going to be in trouble for

A. talking back to the sheriff
B. impersonating Wild Bill Hickok
C. leaving work early
D. taking evidence

39. Which of the following statements is an opinion rather than a statement of fact?

A. The sheriff can always depend on Slat.
B. Mrs. Jones and Mrs. Smith had a fight.
C. Both ladies claim they saw the umbrella first.
D. The salesman is in the hospital.

40. When the sheriff left for the day, he assumed that

A. Mrs. Smith and Mrs. Jones would try to escape
B. Slat would not finish the report
C. the attorneys would not arrive with bail
D. no one would touch the evidence

Color serves a protective function for many animals. It makes some hard to see against their backgrounds. This helps to protect them from their predators--other animals that kill and eat them. Color also serves to protect some predators. It warns them that some animals they would like to eat can harm them.

Many insects are the color of leaves, twigs, or bark. When they rest quietly on a plan or tree, their predators have a hard time spotting them. For example, the underwing, a kind of moth, has gray-and-brown wings that blend with the color of bark.

The color of some animals changes to blend with their backgrounds. The arctic hare, a rabbit, is brown in summer. In winter its fur becomes white to match the snow on the ground. The color of some animals changes more quickly. The mosquito fish, for example, becomes darker or lighter to match its background as it moves around.

Some investigators experimented to see if color really does protect animals from predators. They put mosquito fish in a tank with a white bottom. A few hours later all the fish were light-colored. The investigators then put half the fish in a tank with a black bottom. They immediately freed penguins, seabirds that eat mosquito fish, near the two tanks. After several hours they counted the number of fish in each tank. Most of the fish in the black tank had been eaten. Most of the fish in the white tank were still alive. Thus the investigators found that color does protect mosquito fish. But color is not a foolproof source of protection.

Color serves as a warning to some predators. Some animals are poisonous, sting, give off a bad smell, or taste bad. Many of these animals are brightly colored. They are easily seen by predators.

The investigators experimented to see whether predators know instinctively which bright-colored animals to avoid or whether they learn only by experience. In their experiments they used monarch butterflies and blue jays. Monarchs have bright orange-and-black wings and are believed to taste very bad. The investigators put a hungry young blue jay into a cage with the monarchs. The blue jay caught and ate just one. It did not chase any others.

41. In line 7, bark means

A. the sound a dog makes
B. a loud and angry cry
C. the outside of a tree trunk
D. a kind of beetle

42. Where would you be LEAST likely to find animals like the arctic hare that change color in winter and summer?

A. Canada
B. Florida
C. Alaska
D. Colorado

43. In the test with mosquito fish, what did the investigators find when they counted the fish?

A. All the fish in both tanks had been eaten by the penguins.
B. About half of the mosquito fish in each tank had been eaten.
C. The penguins had eaten more fish from the black tank than from the white tank.
D. Penguins don't like mosquito fish and so had eaten only a few.

44. What was the investigators' last step in the test with the mosquito fish and penguins?

A. They counted the number of fish in each tank.
B. They freed penguins near the tank.
C. They placed mosquito fish in a white tank.
D. They put half the mosquito fish in the black tank.

45. After they placed the mosquito fish in the white tank, the investigators waited before placing half of them in the black tank. Why did they do this?

A. They wanted to make sure the penguins would be hungry.
B. It took several hours for the mosquito fish to become light-colored.
C. It took several hours for the mosquito fish to become dark-colored.
D. They had to count the fish in the tank.

46. In line 15, freed means

A. gave
B. unfastened
C. released
D. banished

47. Based on the story, why did the penguins eat more fish from the black tank than from the white tank?

A. The fish in the black tank moved more slowly than those in the white tank.
B. The fish in the black tank were still light-colored; the penguins could see them better than those in the white tank.
C. The fish in the black tank could not see the penguins as well as those in the white tank.
D. The fish in the black tank had no warning color, so the penguins didn't know they tasted bad.

48. Animals that sting, give off strong smells, or are poisonous often get away from predators by

A. killing them
B. blending with their backgrounds
C. warning them with bright colors
D. changing color

49. What happened when the investigators put the blue jay in the cage with the monarchs?

A. The blue jay ate all the monarchs.
B. The blue jay did not try to catch any monarchs.
C. The blue jay caught and ate one monarch.
D. The monarchs flew away from the blue jay.

50. What did the investigators learn from the experiment with the monarchs and the blue jay?

A. Blue jays learn to relate color and bad taste.
B. Blue jays can't see monarchs clearly.
C. Blue jays have small appetites.
D. Blue jays don't like orange and black.

Sometimes new fields of knowledge start by accident. One such field in the area of industrial psychology was the study of workers' feelings about their jobs.

Once, workers' feelings were not considered very important. Employers thought that good pay and safe physical conditions were all that mattered to workers.

In 1924 the managers of the Hawthorne plant of the Western Electric Company decided that their workers could work faster if they had better lighting. The managers hired experimenters to find out how much light the workers needed. At first, this seemed simple. The experimenters watched some women whose job was winding coils of wire, and they kept track of the number of coils the workers could produce when the lights were dim. Then they made the lights brighter and measured the workers' production again. Just as they expected, the women produced more each time the light was made brighter.

Then a surprising thing happened. They switched back to dim lights, but the workers' production didn't decrease! The workshop was still a beehive of activity. Something besides the increase in light must have been causing the women to work harder.

More experiments followed. The investigators found that workers almost always produced more when they were subjects in an experiment, even when the lights were so dim they could hardly see. The experimenters were very puzzled. Finally they realized that the coil winders were working very hard because the experiment made them feel important. They felt that the company cared about them because they were getting special attention by being in the experiment.

The way this feeling of importance affected the workers' production is called the Hawthorne effect. Its discovery was a major event in the development of industrial psychology. Employers learned that workers' feelings were important after all.

51. If the workshop was a "beehive of activity," the workers must have been

A. talking to each other
B. wandering around
C. making honey
D. working quickly

52. The Hawthorne plant managers hired experimenters to find out

A. how many coils a worker could wind
B. how much light they should put in the workshops
C. how workers might be made to feel important
D. how workers might be influenced

53. How did the workers probably feel about their jobs during the experiment?

A. They liked them because the work wasn't very difficult.
B. They disliked them because the work was more difficult during the experiment.
C. They liked them because the workshop was a bright, cheery place.
D. They liked them because they felt that what they were doing was important to the company.

54. In line 20, felt means

A. touched with the fingertips
B. proved
C. believed
D. a kind of cloth

55. The production by the workers in the experiment increased mainly because of the

A. workers' desire to beat each other
B. workers' desire to earn more money
C. improvement in lighting
D. special attention the workers received

56. How did the experimenters measure the workers' production?

A. They watched to see how hard the people worked.
B. They kept track of the number of coils wound.
C. They recorded the amount of noise that was made.
D. They counted the number of times each worker looked at the light.

57. What did the experimenters try to find out after the surprising results of the first experiment?

A. How the workers felt about being in an experiment
B. How much the coil winders could produce
C. What was affecting the women's work besides the amount of light
D. What kind of light was best for the workers

58. Why does the author describe the experiments at the Hawthorne plant instead of a more recent industrial experiment?

A. The Hawthorne experiments were very important in the development of industrial psychology.
B. There haven't been any industrial psychology experiments since the Hawthorne effect was discovered.
C. The recent experiments are more difficult to explain.
D. There is no particular reason that he chose this example instead of another one.

59. Why didn't the Hawthorne experiment solve the problem it was supposed to solve?

A. The experimenters didn't know what they were trying to find out.
B. The experimenters were trying to find out too many things at once.
C. The results depended upon the effect of only one thing instead of the effects of many things.
D. The results depended upon the effect of something other than the thing that was being studied.

60. What was the first sign that the workers' production was being influenced by something besides the amount of light?

A. The workers said the experiment made them feel important.
B. Production didn't decrease when the bright lights were replaced with dim ones.
C. Production increased each time the light was made brighter.
D. The investigators found that workers produced more when they were part of an experiment.

APPENDIX D

THE EXAMINER'S MANUAL FOR THE MODIFIED EDITION OF THE READING COMPREHENSION TEST

EXAMINER'S MANUAL

ADMINISTERING THE READING TEST

This manual presents the standard procedures for administering this reading test. Teachers who will administer the test should read this manual carefully to gain familiarity with the testing procedures.

It is important that all directions be followed exactly. Only when the tests are administered under uniform conditions can results be used with confidence. Only when this uniformity is maintained for the entire group will the students' scores be comparable.

Study each step in this manual carefully, so that there will be no hesitation in administration. It is desirable that the examiner take the test himself before administering it. If this is not possible, he should read through the test so that he will be familiar with the items.

MATERIALS NEEDED FOR TESTING

Test Booklets

You will need one manual for each examiner; if a large group is being tested, you will need one additional copy for each proctor.

Pencils and Erasers

Instruct the students in advance to come to the test session with two lead pencils and an eraser. You should have a liberal supply of extra pencils to give to students who have not brought their own and to replace those that need sharpening during the testing period. Marks made with pencils will allow students to erase answers if they find need to do so.

Timer

The time required for each student to complete the test must be recorded. An interval timer is best for this purpose, although a stopwatch or a wall clock can be used.

Reading Material

Study materials or books of general interest should be available for students who finish the tests early.

THE TESTING ROOM

Arrange for desk or table space so that each student has room for an open 8½ x 11' test booklet.

The testing room should be quiet, well lighted, and well ventilated. If possible, arrange to test in a room that does not face a playground. Make preparations in advance to reduce recess noises and to keep messengers from entering the testing room. Put a sign on the classroom door that reads "Testing in Progress - Do Not Disturb."

During the testing the students should be separated as much as the seating arrangement of the room will allow. A seating arrangement that discourages copying is much more successful than warning students not to copy.

SIZE OF GROUP AND NUMBER OF PROCTORS

If you are administering the tests to a large group, you will require the assistance of one adult proctor for every 30 students beyond the first 30. Make arrangements in advance with each proctor regarding the section of the room he is to supervise, and go over with him the methods that will be used. Each proctor should read this manual before the testing session.

TIMING THE TEST

These tests emphasize power rather than speed; the time limits are quite generous. All students may have finished before time limits are reached. If everyone has finished, you should call time at once. It is important, however, that full time be allowed even if only two or three students are still working. These slower workers will often be competent and careful students, and they should not be penalized by shortened time limits. You can reduce restlessness among those who finish early by urging them to check their answers and by having general reading materials available.

SCHEDULING THE TEST

The total time required is approximately 1 hour 15 minutes. Actual testing time is 1 hour. Administration time may vary from class to class, but actual testing time must not exceed the specified limits. To aid the examiner in recording the time taken by each student to complete the tests, this manual provides a sheet to record starting and stopping times for each student.

INTRODUCTORY DIRECTIONS TO STUDENTS

(Directions to the examiner are printed with no indentation and should not be read to the students).

> (Directions to the students are indented in this manner and bordered by a vertical bar on the left. The indented sections in quotation marks are quoted directly from the test booklet; the students may read along silently while the examiner reads these sections aloud).

The directions in this section will prepare the students for the test and instruct them in filling in the identifying information on page 2.

Make sure each student has two lead pencils and an eraser. The students should be seated in the desired arrangement and separated as much as possible.

Read all directions slowly and distinctly. Say:

> Today we are going to take a reading test that will help you and your teachers know how well you can remember and use what you have read.

> It is important that you do your best on these tests so that your scores will show clearly your educational strengths and weaknesses.

> The test booklet which I will give you in a moment will provide instructions for marking your answers. You will not be using a separate answer sheet for this test.

I will now give each of you a test booklet. Leave it on your desk until I tell you what to do with it.

DIRECTIONS FOR COMPLETING THE STUDENT INFORMATION PAGE

Each of the students should complete the second page with little assistance from the test administrator.

Open your test booklets to page number 2. Write your name on the first line.

Allow time for all students to write their names.

Write either boy or girl on the second line.

Allow time for all students to indicate sex.

Write your classroom number____.

You may want to tell the students a specific room number to indicate if they are being tested in a room other than the room to which they are regularly assigned.

Write the name of your school on the fourth line.

Allow time for all students to write the school name.

Write the name of the classroom teacher who keeps a record of your attendance each morning.

You may find it necessary to help students at this point. If they have difficulty determining the correct teacher's name, ask them to leave it blank. The teacher's name can be written in later.

It will not be necessary for you to complete the other lines on this page.

Do you have any questions before we begin with the directions for the test?

If there are no student questions, you should begin with the directions on page 3.

DIRECTIONS FOR ADMINISTERING THE READING TEST

Check to see that each student has pencils and an eraser. Then say:

Open your test booklet to page 3. Read the directions for the Reading Test silently while I read them aloud.

READING

DIRECTIONS: "This is a test of how well you understand what you read. The test has directions for reading, stories for you to read and questions for you to answer. Read the directions for each story; read the story; then answer the questions that follow it. Draw a circle around the letter in front of the best answer for each question. Here is an example:

"Read to determine what a child had to do to get his birthday wish. The way that words are used often changes their meaning. What do you think "at once" means in this story?

"Make a wish and blow out the candles!" That's something people have been saying to birthday children for hundreds of years. Long ago, people thought that candles had magic

powers. The candles on a birthday cake had the power of granting a wish. To get the wish the birthday child had to blow out all the candles at once and keep the wish a secret. Today, most people don't believe that candles have magic powers, but the custom goes on.

S1. To get his wish, the birthday child had to
A. eat a piece of cake
B. keep the wish a secret
C. say the right magic words
D. find the special birthday candle

S2. In line 4, "at once" means
A. right away
B. one by one
C. at the right time
D. at the same time

The best answer for questions S1 is B, "keep the wish a secret," so you should draw a circle around B, "keep the wish a secret." The best answer for question S2 is D, "at the same time." You should draw a circle around D, "at the same time."

Remember to draw a circle around only one answer for each question. You can look back at the story when you are answering the questions. If you wish to change an answer, carefully erase your first answer and then draw a circle around the letter in front of your new answer.

When you are told to begin, work until time is called or until you finish answering all of the questions."

Take time to answer any questions. Then say:

Begin!

Write the exact time that you began testing on the Time Record Sheet on the next page.

Record the time that each of the students completes the test.

At the end of 60 minutes ask the students to:

Stop!

Collect all student test booklets. Place all student booklets and administrator's manuals in the envelope provided and return to your elementary school office.

TIME RECORD SHEET

Teacher's Name _____

Elementary School _____

Student Name	Ending Time	Beginning Time	= Total Test Time
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			

	Student Name	Ending Time	Beginning Time	= Total Test Time
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				

APPENDIX E

STUDENT COPY OF THE MODIFIED EDITION

OF THE READING COMPREHENSION TEST

READING

STUDENT NAME: _____

BOY OR GIRL: _____

CLASSROOM: _____

ELEMENTARY SCHOOL: _____

CLASSROOM TEACHER: _____

_____

_____

_____

_____

SRA ASSESSMENT SURVEY
ACHIEVEMENT SERIES
FORM E/BLUE LEVEL
(Modified Edition)

READING

DIRECTIONS: This is a test of how well you understand what you read. The test has directions for reading, stories for you to read and questions for you to answer. Read the directions for each story; read the story; then answer the questions that follow it. Draw a circle around the letter in front of the best answer for each question. Here is an example:

> Read to determine what a child had to do to get his birthday wish. The way that words are used often changes their meaning. What do you think "at once" means in this story?

"Make a wish and blow out the candles!" That's something people have been saying to birthday children for hundreds of years. Long ago, people thought that candles had magic powers. The candles on a birthday cake had the power of granting a wish. To get the wish the birthday child had to blow out all the candles at once and keep the wish a secret. Today, most people don't believe that candles have magic powers, but the custom goes on.

S1. To get his wish, the birthday child had to
- A. eat a piece of cake
- B. keep the wish a secret
- C. say the right magic words
- D. find the special birthday candle

S2. In line 4, "at once" means
- A. right away
- B. one by one
- C. at the right time
- D. at the same time

The best answer for S1 is B, "keep the wish a secret," so you should draw a circle around B, "keep the wish a secret." The best answer for question S2 is D, "at the same time." You should draw a circle around D, "at the same time."

Remember to draw a circle around only one answer for each question. You can look back at the story when you are answering the questions. If you wish to change an answer, carefully erase your first answer and then draw a circle around the letter in front of your new answer.

When you are told to begin, work until time is called or until you finish answering all of the questions.

Read to find out why the dragon warned the townspeople about the man from the North, and how she scared the men away. Try to determine what would be a good title for this story about an unhappy dragon. What can we tell about the author of this story by the way he describes the dragon?

Ella was a gigantic green dragon. She had two heads and a row of neat, sharp points on her back. She could breathe flames that shot out ten feet in every direction. But Ella didn't try to frighten anyone. In fact, she had a problem. She liked people.

Ella lived in a cave near the ocean. She was lonely there. So one day she went to the nearby town.

"Would you like to ride the waves?" she asked some townspeople. Most of the people were afraid of Ella. But a few brave boys decided they would try their luck with Ella and the waves. They had a marvelous time, and whenever they saw Ella after that they asked for another ride.

"Can I take you fishing?" Ella asked the town fishermen. With Ella's help they got more fish than every before. Ella just scooped up the fish in her mouths and tossed them into the net.

Every day Ella took the men fishing. She took children out for rides. She was not lonely anymore.

Ella began to wonder whether she really was a dragon. She knew dragons weren't supposed to like people. But there was nothing she could do. She hated being lonely.

One day as Ella left her cave to go to the city, she saw a large army of men coming from the north on horses. They were carrying swords and shields. Ella ran to the city and warned the people. Then she went to meet the army. She took a deep breath with each mouth and breathed as hard as she could. Flames shot out in all directions. She breathed fire time and time again.

The approaching men stopped short in terror. Then they turned around and ran. Never again did they try to attack the town. Ella knew that she was a real dragon.

1. What kind of dragon was Ella?

   A. Fierce
   B. Mean
   C. Weak.
   D. Friendly

2. In line 8, <u>marvelous</u> means

   A. confusing
   B. wonderful
   C. restful
   D. scary

3. Ella was unhappy at first because she

   A. didn't have any friends
   B. looked funny with two heads
   C. didn't get along with other dragons
   D. had to live in a cave

4. In line 11, "scooped up" means

   A. dipped up
   B. ate up
   C. gulped down
   D. spit out

5. Why did the men from the north come to the town?

   A. To see Ella
   B. To kill the dragon
   C. To go fishing
   D. To capture the town

6. A good title for this story would be

   A. The City Dragon
   B. Fishing with a Dragon
   C. The Dragon That Liked People
   D. All about Dragons

7. From the way the story is told, we know that the author

   A. has met dragons like Ella
   B. understands how Ella feels
   C. thinks Ella is silly
   D. didn't think Ella could scare away the men from the north

8. Why did Ella want to scare the approaching army away?

   A. She was afraid of it.
   B. She wanted to see if she was a real dragon.
   C. The army had tried to hurt her.
   D. Her friends were in danger.

9. The first thing Ella did after she warned the townspeople was to

   A. meet the army
   B. take a deep breath
   C. run to the city
   D. scare the men away

10. When Ella met the approaching army, she

   A. swallowed the men who were near her
   B. made it so windy the men could get no closer
   C. made a terrifying noise
   D. made flames shoot out of her mouths

Read to find out when and why the research began to find the missing substance in the diets of starving people. Try to determine what would be a good title for this story about research on food.

During the Franco-Prussian War the German army surrounded the city of Paris. Food became scarce during the long siege of 1870-71. French scientists tried to find food substitutes to give to the starving people. One scientist, J. B. Dumas, made a synthetic milk by mixing a liquid fat and an albuminous solution. He gave the milk to some children who had no other food. Unfortunately, all these children died of starvation. Apparently the milk lacked some vital element that people need to live. Dumas questioned the wholesomeness of a diet that contained only proteins, carbohydrates, fats, and salts.

In 1905 a Dutch professor, Cornelis Pekelharing, developed a man-made food for laboratory mice. After four weeks of eating only this food, all the mice died. But Pekelharing did not give up. Instead, he tried adding a few drops of whole milk to the food and fed it to another group of mice. This second trial produced healthy, normal mice. It was clear that the missing substance needed for life was required in only very small amounts.

Other scientists continued the search for the missing substance. In 1911 at the Lister Institute, a Polish scientist named Casimir Funk isolated a substance from yeast that cured beriberi. Beriberi is a fatal

disease that attacks both men and animals. Funk named the substances he was working on "vitamines." His co-workers didn't like the name since it implied that the substances came from a particular group of organic compounds called amines. The co-workers thought it was likely that the substances did not all come from this group of compounds. History has proved Funk's colleagues correct. Only one of the vitamins is actually an amine, but the name Funk used has lasted since 1912, although the final e has been dropped.

11. The milk Dumas made probably contained all the following EXCEPT

    A. proteins
    B. fats
    C. vitamins
    D. carbohydrates

12. In line 3, synthetic means

    A. unreal
    B. man-made
    C. nourishing
    D. fresh-tasting

13. What was the direct cause of Dumas's research?

    A. Personal interest of scientists
    B. Food poisoning
    C. Shortage of food
    D. Need for extra food for army

14. Research on vitamins would be of most interest to

    A. doctors
    B. fishermen
    C. lawyers
    D. dentists

15. In line 11, trial means

    A. hardship
    B. test
    C. case in court
    D. food

16. The probable cause of the disease beriberi is

    A. an airborne virus
    B. poisonous foods
    C. the lack of some vitamin
    D. not enough fat in the diet

17. Which of the following would probably contain NO vitamins?

    A. Milk
    B. Water
    C. Yeast
    D. Butter

18. What was probably the reason that the people in Paris were starving?

    A. They couldn't live on Dumas's synthetic milk.
    B. They were suffering from beriberi.
    C. The Germans wouldn't let food into the city.
    D. They didn't know that they needed vitamins.

19. Which of the following would be the best title for this story?

    A. Man-made Milk
    B. The Long Siege
    C. Search for a Vital Substance
    D. Research on Food

20. According to the story, the Franco-Prussian War must have been going on during which of the following time periods?

A. 1870-71
B. 1905-06
C. 1911-12
D. 1914-18

Read to determine what the main point is in this story about a businessman who took a risk to buy a farm and then sold the farm to make a profit. See if you can determine what the first sign was that the value of the land would increase.

Mr. Bement was a happy man. He had just sold his farm to a businessman. For more than a year, Mr. Bement had been trying to sell the farm. The worn-out land no longer produced good crops, and Mr. Bement was an old man. But no one had offered to buy his farm until Mr. Welton came along.

Mr. Welton, a businessman, was anxious to buy the land. He had heard that a superhighway might be built between the cities of Brighton and Wellsburg. It would reduce travel time between the farm and Brighton to about forty-five minutes. If the superhighway were built close to farmer Bement's land, the land could become valuable. If the trip to Brighton were shorter, someone might want to build homes on the land. A clear stream wandered through the hilly, wooded land. Men could work in Brighton and live in the country.

Mr. Welton took a risk. He couldn't be sure that the superhighway would be built. He couldn't be sure that anyone would want to build homes on the land. But he borrowed money from the bank and bought the land. Then he waited.

Two years later the superhighway was completed. It passed within a mile of Mr. Welton's land. Six months later Mr. Welton sold the land. He had several offers. Finally he sold it to Mr. Vitello, a builder who planned to erect homes and sell them. Mr. Vitello paid Mr. Welton three times as much money for the land as Mr. Welton had paid the farmer. Mr. Welton made a good profit.

21. Mr. Welton borrowed money to pay

A. for his home
B. Mr. Vitello
C. the bank
D. for the farm

22. Mr. Bement wanted to sell the farm because he

A. had bought a retirement home
B. knew he could no longer work the farm
C. knew someone wanted to buy it
D. wanted a better farm

23. In line 12 of the story, <u>risk</u> means that Mr. Welton

A. was sure he would make money
B. had a good idea
C. could borrow money
D. was taking a chance

24. Which of the following is an example of profit making?

A. A girl spends a nickel for a marble and loses the marble.
B. A girl spends a nickel for a marble and sells it for three cents.
C. A girl spends a nickel for a marble and sells it for a dime.
D. A girl spends a nickel for a marble and sells it for a nickel.

25. What did Mr. Vitello do?

A. He bought land in Brighton.
B. He bought homes and sold them.
C. He bought the land from the farmer.
D. He bought land and erected homes.

26. The main point of the story is that

A. Mr. Bement made a profit
B. the value of land can change
C. small farms have worn-out land
D. people wanted to build homes

27. In the last line of the story, <u>profit</u> means

A. the risk Mr. Welton took
B. The land Mr. Welton bought
C. the money Mr. Welton gained
D. the business Mr. Welton was in

28. What was the first sign that Mr. Welton's risk was a good one?

A. the superhighway was built
B. Mr. Vitello bought the land.
C. Mr. Bement sold his farm.
D. The farm had hills, water, and trees.

29. Which of the following is an example of risk taking?

A. A boy puts money in a piggy bank to save for a new bike.
B. A boy opens a savings account at the local bank.
C. A boy puts money in his wallet.
D. A boy buys stamps for his collection, hoping their value will increase.

30. The value of the farmland increased because a

A. good businessman bought it
B. superhighway was built nearby
C. lot of homes were built on it
D. lot of money was spent on it

Read to find out where this story takes place, and who is responsible for the evidence being taken. How would you describe the actions of the women in this story, the trouble that the deputy is in, and what the salesman will probably do the next time that he sees a fight?

"I heard you have two women locked up," commented the reporter from the Clarion. "What's the charge?"

"Assault and battery," replied the sheriff. "One is a Mrs. Smith and the other a Mrs. Jones. They've been cooling their heels since three o'clock. Their lawyers are on their way here now to post bail."

"What happened?" asked the reporter.

"Well, Flit's Department Store held their Dollar Sale today. Since it raining, the umbrella department was really crowded. The ladies started a tug-of-war over a purple umbrella. That's it over there on the table. It'll be exhibit A at the trial. Each lady claims she saw it first. Smith says Jones hit her on the arm with the umbrella. Jones is singing a different tune. She says Smith gave her a belt on the head with a bag of hard candy. The candy will be exhibit B. When a salesman tried to stop the fight, they let him have it. He'll be out of the hospital in a week."

The sheriff leaned back, yawned, and looked at the clock. "It's five o'clock. Deputy Slat will be coming on duty. I'll wait until tomorrow to mark those exhibits."

A tall young man swaggered into the room a few minutes later. He drew two imaginary six-guns and growled, "My name is Wild Bill Hickok. I'm here to take the night watch."

"Your name will be mud if you don't finish that report on your desk," said the sheriff. "I'll see you tomorrow."

"You can always depend on Wild Bill," replied Slat as the sheriff and the reporter walked out the door.

He sat down and began to work. I could eat a bear, he said to himself, and glanced around the room. Hey, what's that over there? He walked over to the table and filled his mouth with candy. Loud cracks filled the room. Ummm, good. I'll eat the rest of it while I work. And here's an umbrella. That will come in handy when I go home. The sheriff won't mind if I take it--its all torn up anyhow.

31. The story takes place in a

A. courtroom
B. newspaper office
C. department store
D. county jail

32. Mrs. Smith and Mrs. Jones could best be described as

A. thoughtful
B. violent
C. jealous
D. innocent

33. The next time the salesman sees two people having a fight, he will probably

A. refuse to get involved
B. try to pull the fighters apart
C. explain to them why they shouldn't fight
D. call a reporter

34. When the sheriff says "Jones is singing a different tune," he means that she is

A. telling another side of of the story
B. screaming for her lawyer
C. agreeing with Mrs. Smith
D. singing an unusual song

35. Why is the sheriff really to blame for what Slat did?

A. He shouldn't have gone so early.
B. He should not have allowed Slat to be alone on duty
C. He knew that Slat was always hungry.
D. He didn't mark the umbrella and candy as exhibits.

36. In line 11, <u>belt</u> means a

A. strip of leather
B. safety strap
C. blow
D. song

37. Who has the most reason to sue Mrs. Smith and Mrs. Jones?

A. The owner of Flit's Department Store
B. The salesman
C. The sheriff
D. The reporter from the Clarion

38. Deputy Slat was going to be in trouble for

A. talking back to the sheriff
B. impersonating Wild Bill Hickok
C. leaving work early
D. taking evidence

39. Which of the following statements is an opinion rather than a statement of fact?

A. The sheriff can always depend on Slat.
B. Mrs. Jones and Mrs. Smith had a fight.
C. Both ladies claim they saw the umbrella first.
D. The salesman is in the hospital.

40. When the sheriff left for the day, he assumed that

A. Mrs. Smith and Mrs. Jones would try to escape
B. Slat would not finish the report
C. the attorneys would not arrive with bail
D. no one would touch the evidence

Read to determine what the results were in each of the experiments with color. Find out how color serves to protect animals from their enemies.

Color serves a protective function for many animals. It makes some harder to see against their backgrounds. This helps to protect them from their predators--other animals that kill and eat them. Color also serves to protect some predators. It warns them that some animals they would like to eat can harm them.

Many insects are the color of leaves, twigs, or bark. When they rest quietly on a plant or tree, their predators have a hard time spotting them. For example, the underwing, a kind of moth, has gray-and-brown wings that blend with the color of bark.

The color of some animals changes to blend with their backgrounds. The arctic hare, a rabbit, is brown in summer. In winter its fur becomes white to match the snow on the ground. The color of some animals changes more quickly. The mosquito fish, for example, becomes darker or lighter to match its background as it moves around.

Some investigators experimented to see if color really does protect animals from predators. They put mosquito fish in a tank with a white bottom. A few hours later all the fish were light-colored. The investigators then put half the fish in a tank with a black bottom. They immediately freed penguins, seabirds that eat mosquito fish, near the two tanks. After several hours they counted the number of fish in each tank. Most of the fish in the black tank had been eaten. Most of the fish in the white tank were still alive. Thus the investigators found that color does protect mosquito fish. But color is not a foolproof source of protection.

Color serves as a warning to some predators. Some animals are poisonous, sting, give off a bad smell, or taste bad. Many of these animals are brightly colored. They are easily seen by predators.

Investigators experimented to see whether predators know instinctively which bright-colored animals to avoid or whether they learn only by experience. In their experiments they used monarch butterflies and blue jays. Monarchs have bright orange-and-black wings and are believed to taste very bad. The investigators put a hungry blue jay into a cage with the monarchs. The blue jay caught and ate just one. It did not chase any others.

41. In line 7, bark means

A. the sound a dog makes
B. a loud and angry cry
C. the outside of a tree trunk
D. a kind of beetle

42. Where would you be LEAST likely to find animals like the arctic hare that change color in winter and summer?

A. Canada
B. Florida
C. Alaska
D. Colorado

43. In the test with mosquito fish, what did the investigators find when they counted the fish?

A. All the fish in both tanks had been eaten by the penguins.
B. About half the mosquito fish in each tank had been eaten.
C. The penguins had eaten more fish from the black tank than from the white tank.
D. Penguins don't like mosquito fish and so had eaten only a few.

44. What was the investigators' last step in the test with the mosquito fish and penguins?

A. They counted the number of fish in each tank.
B. They freed penguins near the tank.
C. They placed mosquito fish in a white tank.
D. They put half the mosquito fish in the black tank.

45. After the placed the mosquito fish in the white tank, the investigators waited before placing half of them in the black tank. Why did they do this?

A. They wanted to make sure the penguins would be hungry.
B. It took several hours for the mosquito fish to become light-colored.
C. It took several hours for the mosquito fish to become dark colored.
D. They had to count the fish in the tank.

46. In line 15, freed means

A. gave
B. unfastened
C. released
D. banished

47. Based on the story, why did the penguins eat more fish from the black tank than from the white tank?

A. The fish in the black tank moved more slowly than those in the white tank.
B. The fish in the black tank were still light-colored; the penguins could seem them better than those in the white tank.
C. The fish in the black tank could not see the penguins as well as those in the white tank.
D. The fish in the black tank had no warning color, so the penguins didn't know they tasted bad.

48. Animals that sting, give off strong smells, or are poisonous often get away from predators by

A. killing them
B. blending with their backgrounds
C. warning them with bright colors
D. changing color

49. What happened when the investigators put the blue jay in the cage with the monarchs?

A. The blue jay ate all the monarchs.
B. The blue jay did not try to catch any monarchs.
C. The blue jay caught and ate one monarch.
D. The monarchs flew away from the blue jay.

50. What did the investigators learn from the experiment with the monarchs and the blue jay?

A. Blue jays learn to relate color and bad taste.
B. Blue jays can't see monarchs clearly.
C. Blue jays have small appetites.
D. Blue jays don't like orange and black.

Read to determine why the experiments with factory workers were done, and what the scientists found out about the people because of the experiments. Why do you think such an old study was so important?

Sometimes new fields of knowledge start by accident. One such field in the area of industrial psychology was the study of workers' feelings about their jobs.

Once, workers' feelings were not considered very important. Employers thought that good pay and safe physical conditions were all that mattered to workers.

In 1924 the managers of the Hawthorne plant of the Western Electric Company decided that their workers could work faster if they had better lighting. The managers hired experimenters to find out how much light the workers needed. At first, this seemed simple. The experimenters watched some women whose job was winding coils of wire, and they kept track of the number of coils the workers could produce when the lights were dim. Then they made the lights brighter and measured the workers' production again. Just as they expected, the women

produced more each time the light was made brighter.

Then a surprising thing happened. They switched back to dim lights, but the workers' production didn't decrease! The workshop was still a beehive of activity. Something besides the increase in light must have been causing the women to work harder.

More experiments followed. The investigators found that workers almost always produced more when they were subjects in an experiment, even when the lights were so dim they could hardly see. The experimenters were very puzzled. Finally they realized that the coil winders were working very hard because the experiment made them feel important. They felt that the company cared about them because they were getting special attention by being in the experiment.

The way this feeling of importance affected the workers' production is called the Hawthorne effect. Its discovery was a major event in the development of industrial psychology. Employers learned that workers' feelings were important after all.

51. If the workshop was a "beehive of activity," the workers must have been

A. talking to each other
B. wandering around
C. making honey
D. working quickly

52. The Hawthorne plant managers hired experiments to find out

A. how many coils a worker could wind
B. how much light they should put in the workshops
C. how workers might be made to feel important
D. how workers might be influenced.

53. How did the workers probably feel about their jobs during the experiment?

A. They liked them because the work wasn't very difficult.
B. They disliked them because the work was more difficult during the experiment.
C. They liked them because the workshop was a bright, cheery place.
D. They liked them because they felt that what they were doing was important to the company.

54. In line 20, <u>felt</u> means

A. touched with the fingertips
B. proved
C. believed
D. a kind of cloth

55. The production by the workers in the experiment increased mainly because of the

A. workers' desire to beat each other
B. workers' desire to earn more money
C. improvement in lighting
D. special attention the workers received

56. How did the experimenters measure the workers' production?

A. They watched to see how hard the people worked.
B. They kept track of the number of coils wound.
C. They recorded the amount of noise that was made.
D. They counted the number of times each worker looked at the light.

57. What did the experimenters try to find out after the surprising results of the first experiment?

A. How the workers felt about being in an experiment.
B. How much the coil winders could produce.
C. What was affecting the women's work besides the amount of light.
D. What kind of light was best for the workers.

58. Why does the author describe the experiments at the Hawthrone plant instead of a more recent industrial psychology experiment?

A. The Hawthrone experiments were very important in the development of industrial psychology.
B. There haven't been any industrial psychology experiments since the Hawthorne effect was discovered.
C. The recent experiments are more difficult to explain.
D. There is no particular reason that he chose this example instead of another one.

59. Why didn't the Hawthorne experiment solve the problem it was supposed to solve?

A. The experimenters didn't know what they were trying to find out.
B. The experimenters were trying to find out too many things at once.
C. The results showed the effect of only one thing instead of the effects of many things.
D. The results depended upon the effect of something other than the thing that was being studied.

60. What was the first sign that the workers' production was being influenced by something besides the amount of light?

A. The workers said the experiment made them feel important.
B. Production didn't decrease when the bright lights were replaced with dim ones.
C. Production increased each time the light was made brighter.
D. The investigators found that workers produced more when they were part of an experiment.

STOP HERE.
END OF TEST.

APPENDIX F

SCORING KEY FOR THE READING COMPREHENSION TESTS

SCORING KEY FOR THE READING COMPREHENSION TESTS

1. D	21. D	41. C
2. B	22. B	42. B
3. A	23. D	43. C
4. A	24. C	44. A
5. D	25. D	45. B
6. C	26. B	46. C
7. B	27. C	47. B
8. D	28. A	48. C
9. A	29. D	49. C
10. D	30. B	50. A
11. C	31. D	51. D
12. B	32. B	52. B
13. C	33. A	53. D
14. A	34. A	54. C
15. B	35. D	55. D
16. C	36. C	56. B
17. B	37. B	57. C
18. C	38. D	58. A
19. C	39. A	59. D
20. A	40. D	60. B

APPENDIX G

COMPREHENSION LEVEL FOR EACH TEST ITEM

COMPREHENSION LEVEL FOR EACH TEST ITEM

Story Context: 2, 4, 12, 15, 23, 27, 34, 36, 41, 46, 51, 54.

Restate Material: 10, 20, 21, 22, 25, 43, 48, 49, 52, 55, 56.

Sequencing and Summarizing: 3, 6, 9, 19, 26, 44, 57.

Drawing Inferences: 1, 5, 8, 11, 16, 18, 31, 32, 38, 53, 58.

Making Applications: 14, 17, 24, 29, 33, 42.

Logical Relationships: 7, 13, 28, 30, 35, 37, 39, 40, 45, 47, 50, 59, 60.

Social Studies-type questions: 21, 22, 24, 25, 26, 28, 29, 30, 52, 53, 55, 56, 57, 58, 59, 60.

Science-type questions: 11, 13, 14, 16, 17, 18, 19, 20, 42, 43, 44, 45, 47, 48, 49, 50.

APPENDIX H

THE RAW DATA

THE RAW DATA

The data collected during this investigation is listed on the following pages for the information of the reader. The key to the data is:

I.D. = Subject identification number; 1 to 797

SEX = Sex of each subject; 0 = a girl, 1 = a boy

TG = Treatment group; 0 = control group, 1 = experimental group

SCH = School subject attended; 1 to 8 for the eight schools

TCH = Teacher of each subject; 1 to 32 fifth grade teachers

AGE = Age of subject in total months; i.e., 133 = 11 years, 1 month

ACH = Grade equivalent score in comprehension on the September test

NV = Standard score on the Non-Verbal section of the CAT

MIN = Minutes used by each subject to complete the test

ST1 = Sub-test one = RESTATE MATERIAL (11 items)

ST2 = Sub-test two = SEQUENCING AND SUMMARIZING (7 items)

ST3 = Sub-test three = DRAWING INFERENCES (11 items)

ST4 = Sub-test four = MAKING APPLICATIONS (6 items)

ST5 = Sub-test five = LOGICAL RELATIONSHIPS (13 items)

ST6 = Sub-test six = STORY CONTEXT (12 items)

TOT = Total test score (60 items)

SS = Social studies test score (16 questions)

SC = Science test score (16 questions)

AG = Stratified achievement group; 1 = High 1/3, 2 = Middle 1/3, and 3 = Low 1/3

IQG = Stratified I.Q. group; 1 = High 1/3, 2 = Middle 1/3, and 3 = Low 1/3

I.D. = Subject identification number, repeated for ease in using these lists

TABLE 25

RAW DATA

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
1	0	1	1	2	133	72	104	23	7	5	10	6	10	12	50	11	14	1	2	1
2	0	1	1	2	135	43	109	29	7	5	5	3	3	10	33	8	5	3	2	2
3	1	1	1	2	129	41	96	51	4	2	6	5	7	7	31	8	7	3	3	3
4	1	1	1	2	139	55	114	36	10	5	8	6	6	10	45	10	13	2	2	4
5	1	1	1	2	135	86	116	31	11	5	10	5	11	12	54	13	14	1	1	5
6	0	1	1	2	140	61	106	39	9	2	5	2	6	12	36	10	7	2	2	6
7	0	1	1	2	134	91	126	36	10	4	11	5	12	11	53	13	15	1	1	7
8	0	1	1	2	136	54	119	37	9	4	8	4	7	12	44	9	11	2	1	8
9	1	1	1	2	132	75	124	31	9	4	11	6	10	11	51	13	13	1	1	9
10	1	1	1	2	129	41	111	32	6	3	6	5	6	12	38	8	10	3	2	10
11	1	1	1	2	129	64	111	27	6	6	7	6	6	12	43	7	12	2	2	11
12	0	1	1	2	131	58	105	31	10	3	10	5	11	10	49	12	14	2	2	12
13	0	1	1	2	133	81	124	26	10	4	8	5	10	12	49	12	11	1	1	13
14	0	1	1	2	130	62	98	35	5	4	9	4	9	10	41	8	11	2	3	14
15	0	1	1	2	140	72	99	31	9	6	7	5	7	12	46	12	11	1	3	15
16	0	1	1	2	128	61	114	46	8	4	9	4	7	11	43	9	11	2	2	16
17	1	1	1	2	137	81	110	34	9	4	10	6	11	12	52	11	15	1	2	17
18	1	1	1	2	139	31	88	60	6	4	3	3	1	6	23	4	7	3	3	18
19	0	1	1	2	131	55	108	40	10	4	11	5	11	12	53	12	14	2	2	19
20	1	1	1	2	140	58	118	41	9	4	9	4	7	9	42	11	12	2	1	20
21	1	1	1	2	152	31	95	60	4	2	3	3	1	5	18	3	3	3	3	21
22	0	1	1	2	138	54	122	57	10	5	10	6	10	12	53	12	14	2	1	22
23	0	1	1	4	129	45	114	26	7	4	4	1	3	7	26	5	7	3	2	23
24	0	1	1	4	133	45	87	42	7	2	7	3	7	9	35	7	8	3	3	24
25	0	1	1	4	142	51	94	42	7	2	6	4	7	11	37	6	8	2	3	25
26	0	1	1	4	128	22	81	34	2	5	7	3	6	8	31	7	4	3	3	26

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	St1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
27	0	1	1	4	133	57	120	34	10	5	10	5	9	11	50	12	13	2	1	27
28	0	1	1	4	139	58	129	57	10	4	9	5	11	11	50	11	13	2	1	28
29	0	1	1	4	128	39	94	29	5	3	5	3	4	6	26	4	5	3	3	29
30	0	1	1	4	132	31	78	38	6	2	2	3	4	3	20	5	7	3	3	30
31	0	1	1	4	129	61	116	28	9	5	6	6	8	12	46	10	13	2	1	31
32	0	1	1	4	139	75	109	42	11	6	9	4	9	11	50	13	13	1	2	32
33	0	1	1	4	135	66	111	43	6	4	8	5	9	11	43	8	10	2	2	33
34	0	1	1	4	137	54	111	45	10	5	7	3	7	12	44	12	6	2	2	34
35	0	1	1	4	136	34	82	51	5	3	5	3	4	6	26	6	5	3	3	35
36	1	1	1	4	129	24	98	37	4	2	7	1	6	5	25	4	9	3	3	36
37	0	1	1	4	134	75	126	41	6	4	8	6	10	12	46	9	12	1	1	37
38	1	1	1	4	146	52	91	47	5	5	9	5	9	10	43	9	10	2	3	38
39	1	1	1	4	136	62	120	35	11	2	10	4	10	11	48	12	13	2	1	39
40	1	1	1	4	140	51	109	37	10	6	10	5	10	11	52	12	13	2	2	40
41	1	1	1	4	134	93	126	37	10	6	10	5	9	11	51	12	14	1	1	41
42	1	1	1	4	127	75	129	26	10	6	11	4	11	12	54	15	13	1	1	42
43	1	1	1	4	138	41	114	32	4	2	6	3	3	7	25	4	5	3	2	43
44	1	1	1	4	130	29	102	45	4	1	4	4	2	3	18	4	5	3	3	44
45	1	1	1	4	134	71	122	45	10	6	10	6	10	9	51	15	12	1	1	45
46	0	1	1	4	137	86	98	42	11	3	9	6	12	12	53	13	14	1	3	46
47	1	1	2	6	132	62	96	27	7	1	7	4	5	6	30	5	9	2	3	47
48	1	1	2	6	136	81	91	39	10	4	9	5	5	12	45	12	11	1	3	48
49	1	1	2	6	138	81	108	29	9	4	11	6	11	12	53	13	14	1	2	49
50	1	1	2	6	134	34	142	60	7	4	8	4	6	12	41	10	8	3	1	50
51	1	1	2	6	132	9	127	40	11	4	10	5	7	12	49	13	12	1	1	51
52	1	1	2	6	131	24	86	34	2	3	7	2	2	5	20	3	5	3	3	52
53	1	1	2	6	132	21	92	36	9	1	7	4	3	9	33	7	10	3	3	53
54	1	1	2	6	135	58	109	27	9	3	5	5	5	10	37	9	11	2	2	54

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
55	0	1	2	6	132	49	109	38	8	5	8	6	8	11	46	10	13	3	2	55
56	1	1	2	6	132	24	82	38	5	2	3	1	4	4	19	7	1	3	3	56
57	0	1	2	6	128	52	98	30	6	4	4	4	8	7	33	9	1	0	0	57
58	0	1	2	6	136	71	100	17	7	3	10	5	11	11	47	11	13	1	3	58
59	0	1	2	6	133	71	106	25	10	4	9	6	11	11	51	12	14	1	2	59
60	0	1	2	6	134	39	108	37	5	0	6	4	4	4	26	6	6	3	2	60
61	0	1	2	6	134	68	108	36	8	4	7	4	8	11	42	11	9	2	2	61
62	0	1	2	6	137	62	102	30	6	3	8	5	10	11	43	8	8	2	3	62
63	1	1	2	6	133	21	117	60	3	2	8	5	1	9	28	3	7	3	1	63
64	1	1	2	6	131	45	112	45	8	6	8	3	6	10	41	9	13	3	2	64
65	1	1	2	6	130	29	100	59	6	2	7	5	4	7	31	7	8	3	3	65
66	0	1	2	6	132	91	133	23	10	7	10	6	11	12	56	16	14	1	1	66
67	0	1	2	6	135	54	109	37	5	4	5	5	10	10	39	12	6	2	2	67
68	0	1	2	6	129	51	98	25	5	3	5	3	5	8	29	8	6	2	3	68
69	1	1	2	7	132	26	102	35	3	1	6	4	3	7	24	5	4	3	3	69
70	0	1	2	7	138	102	113	32	10	4	9	5	11	12	51	12	13	1	2	70
71	1	1	2	7	135	29	100	39	2	3	6	4	5	9	29	5	7	3	3	71
72	1	1	2	7	135	57	117	44	6	4	7	5	4	12	38	8	11	2	1	72
73	1	1	2	7	132	31	93	34	4	5	2	1	3	6	21	4	4	3	3	73
74	1	1	2	7	129	49	116	47	7	3	8	4	4	11	37	7	9	3	1	74
75	1	1	2	7	140	58	104	34	7	3	10	4	13	11	48	12	10	2	2	75
76	1	1	2	7	140	81	95	33	10	6	10	5	10	12	53	14	14	1	3	76
77	0	1	2	7	138	55	100	36	8	2	7	3	5	11	36	8	8	2	3	77
78	1	1	2	7	137	34	94	43	4	2	6	3	5	5	25	4	9	3	3	78
79	1	1	2	7	138	61	125	39	8	5	9	4	10	10	46	11	11	2	1	79
80	0	1	2	7	137	47	108	40	7	5	6	5	9	10	42	12	6	3	2	80
81	0	1	2	7	131	47	106	32	7	3	6	5	8	10	39	8	10	3	2	81
82	0	1	2	7	139	62	94	32	9	4	7	5	9	10	44	12	12	2	3	82

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
83	0	1	2	7	136	68	108	38	9	6	11	4	10	11	51	14	13	2	2	83
84	0	1	2	7	135	77	123	39	9	6	9	5	12	12	53	13	14	1	1	84
85	1	1	2	7	140	81	115	20	11	6	10	5	10	11	53	13	15	1	2	85
86	0	1	2	7	138	57	89	33	7	4	6	5	7	11	40	8	12	2	3	86
87	1	1	2	7	137	24	119	21	4	1	4	2	2	6	10	5	3	3	1	87
88	1	1	2	7	130	49	92	35	6	2	4	2	5	7	26	6	9	3	3	88
89	1	1	2	7	133	68	111	33	6	4	11	6	8	11	46	10	11	2	2	89
90	0	1	2	7	130	42	102	34	8	5	7	4	8	11	43	10	10	3	3	90
91	1	1	2	7	132	46	127	58	10	5	8	6	9	11	49	11	15	3	1	91
92	0	1	3	11	131	71	98	29	9	5	8	5	7	11	45	10	11	1	3	92
93	0	1	3	11	136	72	125	34	10	5	8	6	10	11	50	15	14	1	1	93
94	1	1	3	11	134	72	126	38	9	6	9	6	7	12	49	13	11	1	1	94
95	0	1	3	11	140	72	109	26	9	6	11	5	12	12	55	12	15	1	2	95
96	0	1	3	11	139	81	112	32	11	4	9	6	11	12	53	15	13	1	2	96
97	0	1	3	11	130	43	110	31	8	5	9	2	10	11	45	13	7	3	2	97
98	1	1	3	11	129	61	102	39	5	5	8	5	6	9	38	10	8	2	3	98
99	0	1	3	11	133	72	102	29	10	7	10	4	10	12	53	11	15	1	3	99
100	1	1	3	11	136	29	96	34	6	4	5	4	2	6	27	4	9	3	3	100
101	0	1	3	11	139	71	115	31	9	5	10	6	10	10	50	12	14	1	2	101
102	1	1	3	11	136	77	140	37	11	6	9	3	9	11	49	13	11	1	1	102
103	1	1	3	11	129	72	112	35	10	4	10	6	7	12	49	12	16	1	2	103
104	0	1	3	11	139	86	115	28	9	6	11	6	10	12	54	13	15	1	2	104
105	0	1	3	11	139	49	89	33	6	5	6	5	7	9	38	10	9	3	3	105
106	0	1	3	11	132	52	115	37	4	4	8	4	10	12	42	9	6	2	2	106
107	1	1	3	11	139	26	77	32	4	1	7	4	5	7	28	5	9	3	3	107
108	0	1	3	11	134	49	102	46	6	6	6	3	4	10	35	6	12	3	3	108
109	1	1	3	11	129	71	114	31	9	5	9	4	7	11	45	11	12	1	2	109
110	1	1	3	11	128	97	125	23	9	6	9	6	10	12	52	13	14	1	1	110

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
111	1	1	3	11	134	47	109	34	4	4	5	3	6	7	29	7	10	3	2	111
112	1	1	3	11	134	55	120	38	7	4	10	6	8	11	46	8	13	2	1	112
113	0	1	3	11	139	47	120	47	6	4	10	5	8	8	41	12	8	3	1	113
114	0	1	3	11	140	77	118	26	11	7	10	4	13	12	57	16	14	1	1	114
115	1	1	3	11	133	93	109	29	11	6	11	6	12	11	57	15	15	1	2	115
116	1	1	3	11	129	73	100	39	10	5	8	5	10	11	49	12	12	1	3	116
117	0	1	3	11	131	66	103	36	11	2	9	5	9	12	48	12	12	2	2	117
118	1	1	3	12	134	71	106	30	7	5	10	6	8	11	47	9	13	1	2	118
119	1	1	3	12	131	46	124	21	10	6	11	5	12	12	56	13	15	3	1	119
120	1	1	3	12	136	91	114	24	11	6	11	5	12	12	57	15	15	1	2	120
121	0	1	3	12	140	52	97	39	6	5	8	5	6	11	41	11	7	2	3	121
122	1	1	3	12	133	66	111	30	9	3	10	6	7	12	47	10	14	2	2	122
123	1	1	3	12	141	54	99	40	9	3	10	4	7	12	45	11	10	2	3	123
124	1	1	3	12	125	86	130	23	10	5	10	6	11	12	54	13	15	1	1	124
125	1	1	3	12	138	81	119	28	11	5	9	4	12	11	52	14	13	1	1	125
126	1	1	3	12	133	31	83	27	3	2	5	1	4	4	19	1	5	3	3	126
127	1	1	3	12	134	62	108	43	11	7	10	4	10	11	53	14	14	2	2	127
128	1	1	3	12	136	97	122	21	8	5	9	5	12	12	51	13	12	1	1	128
129	0	1	3	12	134	21	93	44	6	3	6	3	5	7	30	6	8	3	3	129
130	0	1	3	12	140	62	116	24	9	4	11	4	11	12	51	11	14	2	1	130
131	1	1	3	12	139	24	84	32	8	2	5	3	6	8	32	7	10	3	3	131
132	0	1	3	12	138	91	113	22	11	6	11	6	13	12	59	16	16	1	2	132
133	0	1	3	12	131	54	89	35	9	7	8	6	11	11	52	13	13	2	3	133
134	1	1	3	12	125	54	118	30	10	4	10	4	5	11	44	12	10	2	1	134
135	0	1	3	12	141	86	116	19	11	7	11	6	13	12	60	16	16	1	1	135
136	1	1	3	12	134	62	105	31	10	7	11	4	9	12	53	14	14	2	2	136
137	0	1	3	12	131	39	116	30	8	6	9	5	9	12	49	11	13	3	1	137
138	0	1	3	12	133	31	89	31	6	2	3	3	6	5	25	6	6	3	3	138

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
139	0	1	3	12	133	54	116	27	7	5	8	6	7	12	45	11	9	2	1	139
140	0	1	3	12	141	107	109	25	11	6	11	6	12	12	58	14	16	1	2	140
141	0	1	3	12	133	58	96	42	10	4	10	3	9	12	48	11	12	2	3	141
142	1	1	3	12	141	62	104	38	9	5	9	5	10	12	50	12	12	2	2	142
143	0	1	3	12	132	66	102	25	9	5	10	3	11	11	49	11	14	2	3	143
144	0	1	3	12	133	75	124	28	9	6	10	6	12	12	55	13	16	1	1	144
145	1	1	3	12	138	31	85	35	3	2	3	4	3	3	19	3	8	3	3	145
146	0	1	4	14	130	61	138	25	9	6	9	4	13	11	52	15	11	2	1	146
147	0	1	4	14	129	81	117	17	7	4	9	5	8	12	45	11	11	1	1	147
148	1	1	4	14	131	61	115	34	10	5	9	4	9	8	45	11	15	2	2	148
149	1	1	4	14	130	49	122	25	10	6	10	6	10	12	53	12	14	3	1	149
150	1	1	4	14	140	66	118	33	10	5	10	6	11	12	54	12	14	2	1	150
151	0	1	4	14	128	62	114	17	7	5	8	5	7	12	44	11	11	2	2	151
152	1	1	4	14	139	97	122	20	9	5	9	5	11	12	51	11	13	1	1	152
153	1	1	4	14	137	43	98	19	5	4	9	2	5	10	35	9	6	3	3	153
154	0	1	4	14	134	72	104	15	8	5	7	6	9	12	47	10	11	1	2	154
155	1	1	4	14	128	43	106	28	6	2	5	4	5	4	26	7	8	3	2	155
156	0	1	4	14	129	49	110	27	9	6	8	6	6	12	47	11	11	3	2	156
157	1	1	4	14	131	41	112	20	6	3	5	3	6	8	31	7	8	3	2	157
158	1	1	4	14	133	21	109	60	2	1	5	5	3	7	23	3	5	3	1	158
159	0	1	4	14	133	72	117	20	5	5	7	3	5	9	34	5	10	1	1	159
160	1	1	4	14	137	88	143	15	11	7	11	5	13	12	59	16	16	1	1	160
161	1	1	4	14	125	102	130	14	11	7	10	5	12	12	57	15	14	1	1	161
162	0	1	4	14	134	49	133	40	7	4	7	5	8	8	39	8	13	3	1	162
163	0	1	4	14	134	0	0	21	10	4	10	5	7	12	48	10	13	0	0	163
164	1	1	4	14	139	91	114	23	10	7	10	5	13	11	56	13	16	1	2	164
165	1	1	4	14	131	83	118	16	9	5	10	4	10	12	50	10	13	1	1	165
166	1	1	4	14	129	34	135	37	10	7	11	5	12	10	55	16	14	3	1	166

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
167	0	1	4	14	133	68	114	23	8	6	19	5	11	11	53	14	14	2	2	167
168	1	1	4	14	131	58	105	35	8	2	10	4	8	11	43	9	11	2	2	168
169	1	1	4	14	144	68	124	24	8	7	7	5	7	10	44	11	14	2	1	169
170	0	1	4	14	129	83	119	25	10	7	11	4	11	12	55	15	13	1	1	170
171	1	1	4	14	133	93	123	20	11	7	11	6	13	12	60	16	16	1	1	171
172	0	1	4	14	134	55	96	20	2	0	2	2	1	4	11	3	2	2	3	172
173	1	1	4	14	131	107	138	14	11	7	10	6	13	12	59	15	16	1	1	173
174	1	1	4	14	136	57	125	17	7	3	11	5	12	11	49	10	13	2	1	174
175	0	1	4	14	125	34	123	25	8	5	8	3	8	11	42	9	11	3	1	175
176	0	1	4	14	128	91	114	17	9	7	11	6	13	11	57	14	16	1	2	176
177	0	1	4	15	133	52	111	31	9	6	10	4	9	10	48	11	13	2	2	177
178	1	1	4	15	129	66	106	24	8	3	11	4	8	12	46	12	9	2	2	178
179	0	1	4	15	126	54	110	31	10	4	9	4	6	12	45	12	8	2	2	179
180	1	1	4	15	139	47	102	26	5	4	5	3	4	10	31	5	6	3	3	180
181	0	1	4	15	137	52	113	28	9	5	10	3	7	11	45	10	12	2	2	181
182	1	1	4	15	132	64	116	33	10	5	10	5	9	12	51	15	13	2	1	182
183	0	1	4	15	134	41	109	26	9	5	10	3	7	11	45	10	12	3	2	183
184	1	1	4	15	136	86	122	24	10	4	8	5	10	12	49	11	13	1	1	184
185	1	1	4	15	140	31	104	29	5	3	4	3	7	6	28	6	10	3	2	185
186	0	1	4	15	136	52	130	33	9	7	10	5	9	11	51	13	14	2	1	186
187	1	1	4	15	134	72	116	29	10	4	10	6	12	11	53	14	14	1	1	187
188	1	1	4	15	129	39	114	33	7	4	8	4	7	11	41	6	14	3	2	188
189	0	1	4	15	140	83	110	29	10	5	10	5	9	9	48	15	11	1	2	189
190	0	1	4	15	132	55	89	20	8	4	8	4	9	12	45	9	11	2	3	190
191	0	1	4	15	137	54	104	34	8	6	9	6	7	11	47	13	12	2	2	191
192	0	1	4	15	133	77	117	21	9	4	10	4	11	10	48	11	13	1	1	192
193	0	1	4	15	130	41	86	33	7	3	9	5	9	11	44	11	10	3	3	193
194	1	1	4	15	138	41	130	31	8	5	9	5	9	10	46	11	12	3	1	194

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
195	1	1	4	15	127	54	108	31	5	3	4	3	9	10	34	5	8	2	2	195
196	1	1	4	15	132	64	112	23	9	2	7	5	9	8	40	10	12	2	2	196
197	0	1	4	15	139	36	122	32	4	2	7	4	3	5	25	5	6	3	1	197
198	0	1	4	15	131	57	121	29	6	4	7	4	6	7	34	9	7	2	1	198
199	1	1	4	15	139	52	122	37	9	3	8	4	7	11	42	9	9	2	1	199
200	0	1	4	15	129	54	119	26	9	5	8	4	9	12	47	8	13	2	1	200
201	0	1	4	15	127	77	109	21	10	6	10	6	11	12	55	14	13	1	2	201
202	0	1	4	15	140	77	120	18	11	6	11	5	12	12	57	15	16	1	1	202
203	1	1	4	15	138	57	110	29	8	6	8	5	6	11	44	8	13	2	2	203
204	1	1	4	15	134	71	109	16	8	4	8	4	9	12	45	12	8	1	2	204
205	0	1	4	15	131	41	102	36	8	5	7	5	5	9	39	9	11	3	3	205
206	0	1	4	15	128	36	112	31	9	4	9	4	8	11	45	12	9	3	2	206
207	0	1	5	18	133	34	101	32	3	1	5	2	2	4	17	0	5	3	3	207
208	1	1	5	18	132	62	106	29	8	6	10	4	5	12	45	11	11	2	2	208
209	0	1	5	18	140	68	109	28	6	4	8	5	11	10	44	9	10	2	2	209
210	1	1	5	18	130	51	98	41	5	2	3	5	3	5	23	4	7	2	3	210
211	1	1	5	18	143	75	108	26	11	5	11	6	10	12	55	14	15	1	2	211
212	0	1	5	18	130	68	93	36	7	2	6	4	6	12	37	7	4	2	3	212
213	0	1	5	18	131	52	97	28	4	3	5	1	6	6	25	4	6	2	3	213
214	0	1	5	18	131	43	103	44	9	5	7	5	6	12	44	7	15	3	2	214
215	1	1	5	18	133	66	111	32	6	3	11	5	7	11	43	11	9	2	2	215
216	1	1	5	18	131	34	89	25	4	5	4	5	5	6	29	11	8	3	3	216
217	0	1	5	18	129	57	122	38	9	6	6	5	10	10	46	13	9	2	1	217
218	0	1	5	18	138	21	95	60	3	2	6	1	2	3	17	2	4	3	3	218
219	0	1	5	18	135	71	132	34	10	5	8	6	9	12	50	14	10	1	1	219
220	1	1	5	18	129	86	116	27	10	5	11	6	10	12	54	12	16	1	1	220
221	1	1	5	18	132	45	96	43	5	4	7	5	3	10	34	5	11	3	3	221
222	1	1	5	18	133	47	79	27	4	5	6	5	4	6	30	3	9	3	3	222

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
223	0	1	5	18	138	64	114	40	6	5	7	5	8	11	42	9	8	2	2	223
224	1	1	5	18	135	43	104	33	5	3	7	5	6	9	35	8	6	3	2	224
225	0	1	5	18	147	51	110	27	6	1	6	2	7	6	28	9	6	2	2	225
226	1	1	5	18	137	45	106	41	9	3	9	3	10	11	45	12	9	3	2	226
227	1	1	5	18	152	64	91	34	7	3	4	3	8	7	32	10	7	2	3	227
228	0	1	5	18	135	41	109	24	4	1	5	1	6	5	22	7	2	3	2	228
229	0	1	5	18	133	75	108	31	8	3	10	5	8	12	46	10	12	1	2	229
230	1	1	5	18	127	66	103	36	9	4	10	6	9	10	48	12	14	2	2	230
231	1	1	5	18	131	71	115	27	9	6	8	4	9	12	48	14	9	1	2	231
232	1	1	5	18	135	43	94	37	6	4	7	5	8	10	40	8	8	3	3	232
233	0	1	5	18	130	91	115	27	6	5	9	5	11	10	46	11	11	1	2	233
234	0	1	5	18	130	86	105	28	9	4	9	6	10	11	49	13	11	1	2	234
235	0	1	5	18	133	24	80	26	3	2	5	2	4	2	18	4	6	3	3	235
236	1	1	5	19	140	66	98	20	11	7	10	5	10	11	54	13	15	2	3	236
237	1	1	5	19	135	21	62	55	4	0	2	3	2	3	14	3	6	3	3	237
238	1	1	5	19	142	36	113	40	6	3	8	2	3	8	30	4	8	3	2	238
239	1	1	5	19	133	77	120	30	11	5	10	5	11	11	53	16	12	1	1	239
240	1	1	5	19	139	72	106	20	9	5	11	6	11	12	54	12	14	1	2	240
241	0	1	5	19	136	83	116	30	11	2	8	5	11	11	48	13	11	1	1	241
242	0	1	5	19	133	58	126	40	6	5	10	3	11	11	46	9	11	2	1	242
243	0	1	5	19	133	61	114	45	8	6	9	4	9	10	46	12	12	2	2	243
244	1	1	5	19	147	43	89	35	8	2	8	6	5	7	36	7	11	3	3	244
245	1	1	5	19	143	47	79	20	5	3	7	5	6	7	33	3	10	3	3	245
246	1	1	5	19	134	71	97	20	10	3	9	5	10	11	48	10	12	1	3	246
247	0	1	5	19	133	77	132	30	8	5	10	6	10	12	51	12	14	1	1	247
248	1	1	5	19	129	81	117	20	9	5	11	5	11	12	53	12	14	1	1	248
249	0	1	5	19	136	97	114	30	9	6	10	5	13	11	54	13	15	1	2	249
250	0	1	5	19	137	64	100	30	5	4	4	3	6	11	33	5	9	2	3	250

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
251	0	1	5	19	146	77	128	35	9	7	9	6	10	11	52	15	13	1	1	251
252	0	1	5	19	126	52	141	35	8	5	6	5	5	11	40	11	11	2	1	252
253	0	1	5	19	138	77	116	60	9	5	8	6	8	12	48	11	12	1	1	253
254	0	1	5	19	140	71	112	35	9	6	11	4	8	10	48	12	13	1	2	254
255	1	1	5	19	135	83	120	30	9	7	10	4	8	12	50	11	12	1	1	255
256	0	1	5	19	140	77	112	35	9	5	10	5	8	11	48	11	12	1	2	256
257	0	1	5	19	139	83	125	25	11	6	8	6	9	12	52	12	14	1	1	257
258	1	1	5	19	132	55	116	30	6	6	9	3	7	7	38	11	12	2	1	258
259	0	1	5	19	140	61	103	40	8	4	9	3	12	10	46	12	11	2	2	259
260	0	1	5	19	134	57	96	40	9	4	9	6	10	12	50	11	13	2	3	260
261	1	1	5	19	135	44	76	30	4	4	5	3	3	10	29	8	6	3	3	261
262	1	1	5	19	133	54	120	35	7	4	10	6	11	12	50	8	15	2	1	262
263	0	1	5	19	131	52	96	35	8	4	11	4	11	11	49	11	15	2	3	263
264	0	1	5	21	125	49	82	27	3	6	7	3	3	5	27	5	7	3	3	264
265	0	1	5	21	146	24	82	43	4	3	3	3	6	4	23	7	3	3	3	265
266	0	1	5	21	135		116	23	11	6	11	5	12	12	57	16	15	0	0	266
267	0	1	5	21	137	75	125	23	9	5	9	5	10	12	50	11	13	1	1	267
268	1	1	5	21	137	62	125	24	3	2	6	2	5	7	25	4	6	2	1	268
269	0	1	5	21	131	54	118	43	9	5	10	5	11	11	51	13	15	2	1	269
270	0	1	5	21	138	77	104	37	10	4	10	6	10	12	52	14	14	1	2	270
271	0	1	5	21	135	52	106	53	6	3	10	4	8	6	37	9	11	2	2	271
272	0	1	5	21	133	61	102	34	6	4	8	3	7	11	39	7	10	2	3	272
273	0	1	5	21	135	77	100	30	6	3	8	5	7	11	40	6	10	1	3	273
274	1	1	5	21	149	62	94	49	7	3	8	4	7	9	38	11	9	2	3	274
275	1	1	5	21	134	24	96	27	7	4	5	0	4	3	23	5	4	3	3	275
276	0	1	5	21	131	26	93	39	5	3	5	3	4	7	27	5	7	3	3	276
277	1	1	5	21	131	51	108	22	7	3	8	5	5	11	39	6	9	2	2	277
278	1	1	5	21	135	54	105	39	5	2	6	3	3	6	25	9	11	2	2	278

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
279	1	1	5	21	134	31	101	25	2	2	4	5	5	6	24	4	6	3	3	279
280	1	1	5	21	130	97	138	20	10	6	10	5	13	10	54	14	14	1	1	280
281	1	1	5	21	131	72	121	33	11	4	10	6	11	12	54	14	15	1	1	281
282	1	1	5	21	151	29	102	30	4	2	3	6	6	4	22	5	7	3	2	282
283	0	1	5	21	131	45	93	39	8	6	7	2	10	10	43	9	12	3	3	283
284	1	1	5	21	127	64	100	33	7	4	6	3	5	11	36	11	8	2	3	284
285	0	1	5	21	128	24	129	59	4	3	2	4	5	7	25	3	6	3	1	285
286	1	1	5	21	137	64	119	33	10	4	10	6	7	12	49	11	14	2	1	286
287	0	1	5	21	133	43	120	28	7	2	8	2	4	8	31	6	7	3	1	287
288	1	1	5	21	130	68	102	36	11	4	8	6	10	12	51	13	15	2	3	288
289	1	1	5	21	133	41	120	37	10	3	8	5	7	12	45	12	14	3	1	289
290	1	1	5	21	140	77	129	39	10	7	10	6	12	12	57	14	15	1	1	290
291	0	1	5	21	133	52	116	42	9	4	7	4	6	10	40	11	9	2	1	291
292	0	1	5	21	126	71	146	32	8	7	8	5	11	12	51	12	14	1	1	292
293	0	1	5	21	133	97	132	31	10	7	10	6	12	12	57	15	14	1	1	293
294	0	1	6	25	130	49	64	45	7	3	7	5	5	10	37	9	7	3	3	294
295	1	1	6	25	126	45	97	28	6	3	5	3	4	9	30	4	9	3	3	295
296	1	1	6	25	138	43	0	35	4	3	7	6	4	10	34	4	6	3	0	296
297	0	1	6	25	138	26	101	55	5	2	4	5	6	8	30	4	10	3	3	297
298	1	1	6	25	137	31	87	48	5	2	6	4	6	8	31	8	7	3	3	298
299	0	1	6	25	137	91	105	40	9	5	9	4	10	12	49	10	11	1	2	299
300	1	1	6	25	141	52	104	46	7	5	9	5	5	9	40	11	9	2	2	300
301	1	1	6	25	130	49	109	48	7	6	8	6	6	12	45	8	14	3	2	301
302	1	1	6	25	144	26	85	30	3	3	8	4	2	7	27	7	3	3	3	302
303	1	1	6	25	133	52	116	45	8	5	10	4	5	10	42	8	13	2	1	303
304	0	1	6	25	138	72	116	42	10	5	10	5	11	11	52	16	12	1	1	304
305	1	1	6	25	133	62	133	36	7	5	9	6	8	11	46	7	15	2	1	305
306	1	1	6	25	140	68	94	25	8	4	7	5	6	11	41	8	10	2	3	306

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
307	1	1	6	25	130	39	94	50	4	1	5	3	5	7	25	5	5	3	3	307
308	0	1	6	25	140	75	125	41	10	5	11	6	13	12	57	15	16	1	1	308
309	0	1	6	25	125	41	126	46	8	7	9	5	7	11	47	13	10	3	1	309
310	0	1	6	25	134	77	137	40	10	6	9	6	12	11	54	12	15	1	1	310
311	1	1	6	25	138	66	125	42	8	6	9	5	10	12	50	11	13	2	1	311
312	1	1	6	25	132	41	121	60	3	4	5	4	8	10	34	5	8	3	1	312
313	0	1	6	25	134	52	106	35	8	1	6	3	8	8	34	8	7	2	2	313
314	1	1	6	25	138	55	116	39	6	4	8	5	8	8	39	8	13	2	1	314
315	1	1	6	25	147	62	88	30	7	4	8	4	9	10	42	7	13	2	3	315
316	0	1	6	25	129	68	102	37	7	5	9	6	4	12	43	8	10	2	3	316
317	0	1	6	25	137	34	101	47	6	2	6	5	5	11	35	8	6	3	3	317
318	1	1	7	27	140	58	112	48	11	7	11	5	10	12	56	15	14	2	2	318
319	1	1	7	27	137	43	100	46	9	3	10	4	8	11	45	9	12	3	3	319
320	0	1	7	27	129	83	135	33	10	7	9	4	10	12	52	13	11	1	1	320
321	1	1	7	27	130	91	124	24	11	5	9	5	9	11	50	12	14	1	1	321
322	1	1	7	27	134	39	91	31	6	3	4	3	5	6	27	10	4	3	3	322
323	1	1	7	27	131	22	87	13	5	6	3	4	4	5	27	7	8	3	3	323
324	0	1	7	27	127	57	122	29	9	6	10	4	10	11	50	13	14	2	1	324
325	0	1	7	27	131	66	110	39	7	3	6	2	7	9	31	7	5	2	2	325
326	0	1	7	27	139	96	106	41	9	4	8	5	5	12	43	8	11	1	2	326
327	1	1	7	27	131	36	84	32	6	2	5	1	3	9	26	5	4	3	3	327
328	1	1	7	27	129	91	106	26	10	6	9	4	12	12	53	13	14	1	2	328
329	1	1	7	27	129	58	122	41	6	2	8	5	5	11	37	8	8	2	1	329
330	1	1	7	27	133	43	117	30	7	5	8	4	6	8	38	9	11	3	1	330
331	1	1	7	27	135	86	132	29	11	6	10	5	12	12	56	14	14	1	1	331
332	1	1	7	27	139	72	104	20	9	5	9	5	8	12	48	11	11	1	2	332
333	0	1	7	27	134	58	100	27	5	3	8	3	5	10	34	6	8	2	3	333
334	0	1	7	27	136	64	119	38	8	6	8	6	11	11	50	9	14	2	1	334

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST¢	TOT	SS	SC	AG	IQG	I.D.
335	0	1	7	27	130	93	124	34	10	5	11	6	13	12	57	15	15	1	1	335
336	1	1	7	27	129	66	91	43	8	4	11	4	8	12	47	10	13	2	3	336
337	0	1	7	27	129	0	108	48	5	3	3	1	2	7	20	3	4	0	0	337
338	0	1	7	27	138	45	130	31	4	3	5	4	4	9	29	4	6	3	1	338
339	0	1	7	29	137	77	101	45	11	7	7	5	11	11	52	13	15	1	3	339
340	0	1	7	29	131	56	133	34	10	4	10	5	10	11	50	11	13	2	1	340
341	0	1	7	29	132	49	124	37	7	5	5	5	8	9	39	9	10	3	1	341
342	1	1	7	29	135	55	105	44	10	6	10	5	9	10	50	13	12	2	2	342
343	0	1	7	29	131	64	116	51	8	6	9	5	5	11	44	11	12	2	1	343
344	1	1	7	29	139	81	114	29	9	5	11	5	12	12	54	14	14	1	2	344
345	0	1	7	29	137	26	114	35	4	3	3	0	2	6	18	1	5	3	2	345
346	1	1	7	29	137	96	119	30	10	4	8	5	7	12	46	11	12	1	1	346
347	1	1	7	29	135	24	88	29	5	3	4	3	5	6	26	5	6	3	3	347
348	0	1	7	29	138	91	135	20	11	7	11	6	10	12	57	14	16	1	1	348
349	1	1	7	29	145	21	68	40	4	1	3	0	5	4	17	3	5	3	3	349
350	1	1	7	29	141	51	104	39	9	4	7	3	10	12	45	10	12	2	2	350
351	0	1	7	29	127	39	112	28	3	5	5	4	8	8	34	8	8	3	2	351
352	1	1	7	29	134	61	96	22	5	7	7	5	10	11	45	8	11	2	3	352
353	0	1	7	29	130	62	110	48	6	3	8	5	9	9	40	7	11	2	2	353
354	1	1	7	29	134	58	96	37	7	1	10	6	11	11	46	10	13	2	3	354
355	1	1	7	29	139	66	114	49	10	6	11	5	9	12	53	14	13	2	2	355
356	0	1	7	29	131	71	100	37	3	3	6	5	5	10	32	5	7	1	3	356
357	0	1	7	29	139	34	86	48	5	1	2	2	2	6	18	5	2	3	3	357
358	1	1	7	29	134	93	111	23	11	6	11	5	10	12	55	15	13	1	2	358
359	1	1	7	29	140	24	91	29	7	3	7	1	6	7	31	6	7	3	3	359
360	0	1	7	29	128	55	94	28	5	2	5	4	7	8	31	5	8	2	3	361
361	1	1	7	29	133	75	97	29	8	3	9	5	9	10	44	8	13	1	3	361
362	1	1	7	29	131	33	93	43	3	2	5	3	2	3	18	3	6	3	3	362

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
363	0	1	7	30	139	54	103	44	6	5	7	4	9	12	43	8	9	2	2	363
364	0	1	7	30	140	71	102	23	7	3	9	4	9	12	44	9	12	1	3	364
365	1	1	7	30	127	62	116	31	8	2	10	4	8	12	44	10	11	2	1	365
366	0	1	7	30	127	62	130	37	10	4	9	5	8	11	47	11	11	2	1	366
367	0	1	7	30	130	53	118	31	4	4	7	3	2	12	32	7	3	2	1	367
368	1	1	7	30	130	34	100	32	5	0	6	2	5	2	20	5	7	3	3	368
369	0	1	7	30	134	93	126	34	11	6	10	6	13	12	58	14	16	1	1	369
370	0	1	7	30	137	93	130	30	10	6	7	5	10	11	49	12	13	1	1	370
371	1	1	7	30	130	64	108	53	7	3	10	5	8	11	44	10	11	2	2	371
372	0	1	7	30	132	26	80	35	5	1	8	3	3	7	27	4	8	3	3	372
373	0	1	7	30	133	49	95	29	8	4	6	4	6	9	37	8	9	3	3	373
374	1	1	7	30	131	54	112	31	6	2	8	3	3	8	30	4	10	2	2	374
375	1	1	7	30	134	61	104	37	9	4	6	5	9	10	43	11	11	2	2	375
376	0	1	7	30	131	36	124	42	7	4	6	4	6	8	35	10	8	3	1	376
377	1	1	7	30	138	54	87	56	5	2	6	4	4	9	30	7	4	2	3	377
378	1	1	7	30	139	57	94	36	6	3	5	5	3	10	32	9	7	2	3	378
379	0	1	7	30	133	68	108	32	9	4	8	6	9	10	46	12	11	2	2	379
380	1	1	7	30	141	22	82	31	5	4	3	3	4	7	26	5	6	3	3	380
381	0	1	7	30	125	93	126	32	10	7	9	4	10	12	52	13	12	1	1	381
382	0	1	7	30	136	71	110	35	10	3	9	4	10	12	48	12	12	1	2	382
383	1	1	7	30	134	102	92	24	11	5	10	5	12	10	53	15	14	1	3	383
384	1	1	7	30	135	81	117	20	10	5	9	4	10	12	50	12	13	1	1	384
385	1	1	7	30	135	31	82	28	6	3	5	2	5	9	30	6	5	3	3	385
386	1	1	7	30	126	29	103	26	4	2	3	2	4	4	19	3	7	3	2	386
387	1	1	7	30	139	77	114	28	10	7	8	5	7	12	49	11	13	1	2	387
388	0	1	8	31	133	54	95	30	4	5	6	4	9	6	34	8	9	2	3	388
389	0	1	8	31	131	62	105	31	8	4	6	6	9	9	42	10	11	2	2	389
390	1	1	8	31	130	72	93	41	2	2	6	3	4	6	23	4	4	1	3	390

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
391	0	1	8	31	133	66	116	31	9	4	7	5	8	9	42	13	8	2	1	391
392	1	1	8	31	134	26	79	40	4	3	4	2	3	5	21	3	5	3	3	392
393	0	1	8	31	132	68	106	33	11	5	7	6	9	12	50	12	13	2	2	393
394	0	1	8	31	133	62	115	42	6	3	2	3	3	2	19	6	9	2	2	394
395	1	1	8	31	138	72	122	37	10	5	9	5	12	11	52	13	14	1	1	395
396	0	1	8	31	132	71	109	21	8	5	9	6	12	12	52	10	14	1	2	396
397	0	1	8	31	131	75	127	36	8	4	7	3	8	11	41	11	6	1	1	397
398	0	1	8	31	140	58	122	43	10	6	7	4	8	11	46	13	9	2	1	398
399	1	1	8	31	132	68	116	38	10	5	9	5	10	11	50	13	11	2	1	399
400	0	1	8	31	130	54	108	54	5	0	9	2	8	9	33	8	6	2	2	400
401	0	1	8	31	125	71	130	44	10	7	10	4	7	12	50	15	12	1	1	401
402	0	1	8	31	136	39	94	27	7	3	4	4	3	6	27	6	7	3	3	402
403	1	1	8	31	134	47	102	41	7	3	8	5	8	11	42	10	9	3	3	403
404	1	1	8	31	139	93	129	21	9	6	11	6	13	12	57	14	15	1	1	404
405	0	1	8	31	136	83	113	26	7	3	7	6	8	12	43	10	11	1	2	405
406	0	1	8	31	132	77	112	38	8	4	9	5	7	11	44	10	12	1	2	406
407	0	1	8	31	127	34	113	34	7	3	7	4	5	10	36	9	8	3	2	407
408	0	1	8	31	133	58	83	31	6	3	2	4	0	7	22	6	4	2	3	408
409	0	1	8	31	137	42	88	60	1	1	5	0	2	2	12	0	3	3	3	409
410	1	1	8	31	141	72	90	40	9	4	10	5	9	12	49	12	12	1	3	410
411	0	1	8	31	141	21	90	36	7	3	4	3	5	7	29	8	9	3	3	411
412	1	1	8	31	144	41	91	31	4	4	2	6	6	9	31	7	6	3	3	412
413	1	1	8	31	137	72	114	53	8	4	6	4	3	8	33	11	7	1	2	413
414	0	1	8	31	130	26	110	43	6	4	2	1	1	6	20	4	5	3	2	414
415	1	1	7	27	127	95	95	37	10	5	9	3	7	10	44	12	9	1	3	415
416	0	0	1	1				25	11	4	10	5	9	12	51	12	14	0	0	416
417	0	0	1	1	130	31	102	37	5	4	7	2	8	10	36	4	10	3	3	417
418	0	0	1	1	133	51	101	31	5	4	6	6	9	12	42	8	7	2	3	418

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
419	0	0	1	1	134	71	123	30	9	4	9	5	5	9	41	8	13	1	1	419
420	1	0	1	1	136	24	100	32	8	4	4	3	3	8	30	6	10	3	3	420
421	0	0	1	1	134	51	91	25	3	4	1	2	5	2	17	4	7	2	3	421
422	0	0	1	1	133	36	93	37	3	2	6	1	7	5	24	3	6	3	3	422
423	0	0	1	1	129	62	114	23	9	4	8	5	9	12	47	11	11	2	2	423
424	0	0	1	1	134	52	101	49	4	5	8	5	5	10	37	7	8	2	3	424
425	1	0	1	1	131	62	121	33	8	5	9	5	10	11	48	10	11	2	1	425
426	1	0	1	1	144	41	67	25	2	1	2	0	3	5	13	3	0	3	3	426
427	0	0	1	1	136	75	105	27	9	3	9	4	9	12	46	9	12	1	2	427
428	1	0	1	1	136	55	104	28	4	3	7	2	5	6	27	5	9	2	2	428
429	0	0	1	1	131	81	124	28	8	2	7	5	9	12	43	8	12	1	1	429
430	1	0	1	1	134	49	123	46	10	5	9	4	11	10	49	12	13	3	1	430
431	0	0	1	1	135	107	102	25	9	5	11	6	12	12	55	15	12	1	3	431
432	0	0	1	1	137	68	122	38	11	7	10	6	11	12	57	15	14	2	1	432
433	0	0	1	1	140	72	118	25	7	5	11	5	11	12	51	10	13	1	1	433
434	0	0	1	1	136	71	122	29	11	5	6	4	9	12	47	12	12	1	1	434
435	0	0	1	1	129	81	125	28	10	6	10	6	10	12	54	13	16	1	1	435
436	0	0	1	1	132	54	102	41	7	4	8	5	6	8	38	8	9	2	3	436
437	1	0	1	1	132	62	106	34	10	2	10	4	10	11	47	10	12	2	2	437
438	1	0	1	1	133	72	114	32	8	3	9	6	8	12	36	8	14	1	2	438
439	0	0	1	1	130	45	102	25	5	2	7	3	4	11	32	3	8	3	3	439
440	0	0	1	1	126	72	111	30	9	6	9	6	7	10	47	11	13	1	2	440
441	0	0	1	3	135	43	108	47	5	1	5	2	5	6	24	7	5	3	2	441
442	1	0	1	3	137	66	122	22	8	5	10	6	8	12	49	11	12	2	1	442
443	0	0	1	3	133	62	126	49	8	4	9	6	8	12	47	9	13	2	1	443
444	0	0	1	3	130	36	106	20	5	4	8	5	6	8	36	9	8	3	2	444
445	0	0	1	3	136	61	106	28	5	1	4	4	5	10	29	4	6	2	2	445
446	0	0	1	3	132	66	122	49	7	5	7	5	9	12	45	11	12	2	1	446

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
447	0	0	1	3	129	31	114	19	3	3	5	5	3	3	22	4	7	3	2	447
448	1	0	1	3	138	75	92	25	4	3	10	5	9	10	41	10	8	1	3	448
449	1	0	1	3	139	61	85	18	3	3	4	4	6	11	31	6	8	2	3	449
450	1	0	1	3	138	77	122	27	4	2	8	5	6	11	36	6	9	1	1	450
451	0	0	1	3	128	72	89	21	10	4	9	4	8	11	46	12	11	1	3	451
452	0	0	1	3	132	68	108	28	5	4	7	5	5	10	36	5	11	2	2	452
453	1	0	1	3	137	91	94	27	10	5	10	5	11	11	52	13	13	1	3	453
454	1	0	1	3	131	66	116	33	6	2	8	4	5	12	37	9	10	2	1	454
455	1	0	1	3	129	47	110	27	3	2	8	5	5	10	33	3	8	3	2	455
456	0	0	1	3	135	26	102	38	4	2	6	4	3	11	30	7	3	3	3	456
457	0	0	1	3	131	71	90	33	8	5	8	4	8	11	44	11	9	1	3	457
458	1	0	1	3	138	43	95	39	6	3	6	5	5	5	30	6	9	3	3	458
459	1	0	1	3	136	75	113	37	9	6	9	4	9	12	49	12	13	1	2	459
460	1	0	1	3	135	26	92	23	3	1	2	2	2	4	14	4	3	3	3	460
461	0	0	1	3	130	45	108	34	6	6	9	5	8	11	45	9	10	3	2	461
462	0	0	1	3	136	75	105	29	9	6	9	4	9	11	48	12	10	1	2	462
463	1	0	1	3	134	55	126	24	7	4	5	4	9	12	41	10	12	2	1	463
464	1	0	2	5	132	57	89	19	8	4	3	2	7	8	32	7	8	2	3	464
465	1	0	2	5	133	36	108	53	8	5	7	6	10	11	47	12	13	3	2	465
466	1	0	2	5	133	26	100	40	7	2	2	4	2	8	25	7	5	3	3	466
467	1	0	2	5	135	37	91	38	4	3	4	3	6	9	29	5	4	3	3	467
468	0	0	2	5	131	52	106	35	10	3	10	5	10	12	50	12	12	2	2	468
469	1	0	2	5	136	41	104	38	9	5	7	4	6	11	42	11	10	3	2	469
470	0	0	2	5	133	49	109	35	6	4	5	4	6	12	37	6	9	3	2	470
471	0	0	2	5	136	71	113	40	6	4	9	5	9	12	45	8	10	1	2	471
472	1	0	2	5	136	83	116	20	11	6	8	6	12	12	55	14	14	1	1	472
473	0	0	2	5	140	77	125	33	10	6	11	5	13	12	57	15	14	1	1	473
474	0	0	2	5	126	36	90	38	4	3	5	4	7	9	32	5	6	3	3	474

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
475	1	0	2	5	141	93	112	33	11	7	9	6	10	12	55	14	15	1	2	475
476	0	0	2	5	133	34	83	43	3	1	4	2	6	7	23	2	6	3	3	476
477	1	0	2	5	119	43	112	50	8	2	8	6	8	7	39	10	11	3	2	477
478	0	0	2	5	139	47	96	45	8	5	8	3	11	10	45	10	10	3	3	478
479	1	0	2	5	135	93	142	40	11	6	11	6	11	12	57	13	16	1	1	479
480	0	0	2	5	129	34	98	35	3	5	4	2	4	4	22	5	6	3	3	480
481	1	0	2	5	131	26	80	40	6	4	5	2	2	3	22	6	7	3	3	481
482	1	0	2	5	131	21	108	40	6	4	6	2	2	9	29	5	7	3	2	482
483	1	0	2	5	131	52	98	23	8	3	5	3	8	8	35	9	10	2	3	483
484	0	0	2	5	133	51	93	47	8	4	9	6	7	7	41	9	11	2	3	484
485	1	0	2	5	140	34	78	30	4	1	3	2	5	8	23	5	5	3	3	485
486	0	0	2	5	136	36	113	38	9	5	6	4	5	11	40	12	7	3	2	486
487	1	0	2	5	135	22	106	50	4	4	7	1	4	3	23	3	10	3	2	487
488	0	0	2	8	140	47	115	36	9	2	10	2	6	8	37	10	10	3	2	488
489	1	0	2	8	135	43	116	55	6	6	5	5	8	11	41	10	12	3	1	489
490	1	0	2	8	130	52	127	33	10	5	10	5	7	11	48	11	13	2	1	490
491	0	0	2	8	134	54	120	32	5	5	8	6	9	11	44	7	12	2	1	491
492	1	0	2	8	133	36	105	40	5	3	2	1	2	5	18	4	6	3	2	492
493	1	0	2	8	133	66	84	36	8	6	9	5	9	11	48	12	10	2	3	493
494	1	0	2	8	132	55	94	38	6	6	8	4	8	9	41	9	10	2	3	494
495	1	0	2	8	137	86	114	25	11	6	11	6	10	11	55	14	15	1	2	495
496	1	0	2	8	133	61	116	38	8	5	8	5	6	11	43	10	11	2	1	496
497	1	0	2	8	132	26	93	29	5	1	4	3	3	10	26	7	4	3	3	497
498	1	0	2	8	137	47	94	32	6	1	8	5	6	9	35	7	8	3	3	498
499	0	0	2	8	137	52	108	29	8	4	10	6	8	12	48	11	12	2	2	499
500	0	0	2	8	131	71	109	37	9	6	9	4	11	12	51	9	15	1	2	500
501	1	0	2	8	134	34	102	60	3	2	9	5	4	7	30	4	7	3	3	501
502	1	0	2	8	143	55	89	49	8	4	6	3	9	11	41	9	11	2	3	502

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
503	0	0	2	8	135	102	132	22	10	6	11	6	11	12	56	13	16	1	1	503
504	1	0	2	8	131	21	92	43	3	1	1	0	3	1	9	4	1	3	3	504
505	1	0	2	8	139	41	129	35	8	3	11	5	9	12	48	8	14	3	1	505
506	0	0	2	8	140	68	104	29	8	4	11	5	9	10	47	10	13	2	2	506
507	1	0	2	8	129	54	109	34	7	4	9	5	7	10	42	12	8	2	2	507
508	1	0	2	8	129	34	125	39	7	1	7	5	2	10	32	5	9	3	1	508
509	0	0	2	8	134	31	111	29	5	3	8	3	3	10	32	3	7	3	2	509
510	0	0	2	8	132	41	100	41	4	2	5	4	8	10	33	4	9	3	3	510
511	0	0	2	8	140	57	102	41	11	3	11	5	9	11	50	14	13	2	3	511
512	0	0	2	8	137	72	116	47	10	4	8	5	10	12	49	12	11	1	1	512
513	0	0	3	9	130	71	108	23	9	6	11	5	10	12	53	14	14	1	2	513
514	1	0	3	9	140	73	114	24	10	5	8	5	13	10	51	13	13	1	2	514
515	1	0	3	9	130	49	110	39	7	6	8	3	10	10	44	7	12	3	2	515
516	1	0	3	9	137	52	105	54	9	4	8	6	7	12	46	13	9	2	2	516
517	1	0	3	9	134	29	126	60	3	2	4	0	3	5	17	3	2	3	1	517
518	0	0	3	9	138	77	122	27	10	4	9	4	10	11	48	12	10	1	1	518
519	1	0	3	9	129	49	96	33	8	4	7	4	7	11	41	9	11	3	3	519
520	0	0	3	9	137	88	125	23	11	7	11	6	13	12	60	16	16	1	1	520
521	0	0	3	9	137	66	116	30	8	7	9	6	5	11	46	9	12	2	1	521
522	0	0	3	9	134	61	126	45	8	2	5	4	8	11	38	10	9	2	1	522
523	0	0	3	9	132	58	110	33	10	5	9	4	7	11	46	12	12	2	2	523
524	1	0	3	9	137	72	122	34	11	6	11	6	11	12	57	15	16	1	1	524
525	1	0	3	9	125	52	96	33	9	4	7	5	8	8	41	12	11	2	3	525
526	1	0	3	9	133	77	114	25	11	5	10	4	10	11	51	12	14	1	2	526
527	0	0	3	9	131	29	95	32	6	4	8	5	7	10	40	3	14	3	3	527
528	0	0	3	9	138	71	116	23	10	5	10	5	11	12	53	13	14	1	1	528
529	1	0	3	9	134	66	102	28	11	6	11	5	10	12	55	15	14	2	3	529
530	0	0	3	9	139	77	129	31	10	7	10	4	10	11	52	14	14	1	1	530

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
531	0	0	3	9	130	52	127	45	8	4	7	5	10	10	44	11	10	2	1	531
532	1	0	3	9	138	48	102	52	5	1	6	3	6	8	29	7	7	3	3	532
533	1	0	3	9	130	62	112	43	8	4	10	5	9	9	45	10	11	2	2	533
534	0	0	3	9	128	36	122	31	5	3	8	5	6	10	37	4	11	3	1	534
535	1	0	3	9	133	71	117	43	10	5	9	6	10	11	51	12	14	1	1	535
536	1	0	3	9	134	49	109	31	8	3	9	3	5	9	37	9	7	3	2	536
537	0	0	3	9	131	66	112	32	10	5	8	3	9	12	47	12	12	2	2	537
538	0	0	3	10	129	68	114	35	8	4	8	4	6	11	41	10	10	2	2	538
539	1	0	3	10	132	91	102	22	10	6	9	6	7	12	50	10	13	1	3	539
540	0	0	3	10	132	24	112	60	4	2	4	1	1	7	19	1	6	3	2	540
541	0	0	3	10	139	68	115	35	7	3	9	4	7	12	42	8	12	2	2	541
542	1	0	3	10	132	77	138	38	11	7	11	6	11	12	58	15	15	1	1	542
543	1	0	3	10	133	64	106	37	8	5	8	5	8	11	45	10	12	2	2	543
544	0	0	3	10	136	93	119	24	10	7	11	6	13	11	58	15	16	1	1	544
545	0	0	3	10	139	36	88	38	6	2	7	2	3	8	28	6	7	3	3	545
546	0	0	3	10	148	61	90	31	9	6	10	6	9	12	52	14	13	2	3	546
547	0	0	3	10	135	81	120	17	11	6	9	5	11	12	54	15	13	1	1	547
548	0	0	3	10	129	83	140	30	10	5	9	6	8	12	50	10	15	1	1	548
549	1	0	3	10	130	81	121	32	8	5	10	4	11	12	50	12	10	1	1	549
550	1	0	3	10	132	72	121	35	9	5	10	6	11	12	53	11	15	1	1	550
551	0	0	3	10	131	54	105	38	9	3	8	4	5	12	41	9	11	2	2	551
552	1	0	3	10	138	57	113	60	6	4	8	4	8	9	39	6	12	2	2	552
553	1	0	3	10	134	36	105	34	7	4	9	5	9	10	44	11	10	3	2	553
554	1	0	3	10	132	83	121	36	10	5	11	5	12	12	55	15	15	1	1	554
555	0	0	3	10	130	81	109	37	11	6	8	5	9	11	50	13	13	1	2	555
556	1	0	3	10	128	21	117	32	5	2	2	5	4	10	28	5	6	3	1	556
557	1	0	3	10	132	68	110	36	9	5	9	4	11	10	48	13	10	2	2	557
558	1	0	3	10	128	47	125	39	8	4	8	5	9	11	45	11	13	3	1	558

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
559	0	0	3	10	128	77	108	29	7	3	10	4	9	12	45	8	14	1	2	559
560	0	0	3	10	139	62	120	29	7	5	10	5	8	12	47	9	11	2	1	560
561	1	0	3	10	132	43	98	32	6	2	2	2	3	5	20	6	5	3	3	561
562	0	0	3	10	134	83	108	34	7	6	9	5	10	12	49	10	12	1	2	562
563	1	0	4	13	139	72	117	18	4	4	5	3	8	10	34	8	8	1	1	563
564	0	0	4	13	141	21	82	46	1	2	3	3	3	5	17	2	4	3	3	564
565	0	0	4	13	132	77	100	17	10	5	10	5	11	9	50	14	11	1	2	565
566	0	0	4	13	132	75	109	26	10	3	10	5	10	12	50	13	13	1	2	566
567	1	0	4	13	129	75	125	25	11	7	8	6	11	12	55	15	15	1	1	567
568	1	0	4	13	135	57	109	33	10	6	8	5	10	12	51	13	12	2	2	568
569	0	0	4	13	133	66	108	25	11	4	10	4	7	9	45	11	13	2	2	569
570	1	0	4	13	134	72	142	27	10	5	10	5	11	12	53	15	12	1	1	570
571	1	0	4	13	130	75	118	21	10	4	9	6	10	11	50	13	12	1	1	571
572	1	0	4	13	126	47	120	24	9	4	10	3	11	12	49	12	12	3	1	572
573	1	0	4	13	137	97	122	35	10	5	11	6	11	12	55	14	15	1	1	573
574	1	0	4	12	140	83	115	24	10	4	8	6	8	10	46	11	13	1	1	574
575	0	0	4	13	132	52	100	28	7	2	7	3	5	7	31	7	6	2	3	575
576	0	0	4	13	148	73	117	35	10	5	10	6	13	11	55	14	14	1	1	576
577	1	0	4	13	134	51	123	35	10	4	8	4	8	11	45	12	10	2	1	577
578	1	0	4	13	136	26	122	45	5	4	8	4	4	8	33	7	9	3	1	578
579	0	0	4	13	130	36	96	38	7	1	5	3	8	8	32	10	5	3	3	579
580	0	0	4	13	129	57	116	23	11	5	10	6	11	12	55	14	15	2	1	580
581	0	0	4	13	137	00	101	23	8	5	8	5	10	10	46	11	13	0	0	581
582	1	0	4	13	135	55	108	28	10	3	10	5	8	11	47	11	13	2	2	582
583	1	0	4	13	130	86	109	20	10	5	9	5	8	12	49	9	14	1	2	583
584	0	0	4	13	130	66	106	22	9	3	10	5	9	12	48	9	13	2	2	584
585	0	0	4	13	132	58	124	33	11	4	9	5	9	12	50	13	14	2	1	585
586	1	0	4	13	139	36	88	30	4	3	6	4	4	6	27	3	6	3	3	586

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
587	0	0	4	13	133	81	114	19	11	6	10	6	13	12	58	15	16	1	2	587
588	1	0	4	13	133	62	116	34	11	7	11	4	13	12	58	16	15	2	1	588
589	1	0	4	13	140	26	94	45	6	6	10	4	8	10	44	10	11	3	3	589
590	1	0	4	13	155	50	80	38	8	6	9	4	9	10	46	11	12	2	3	590
591	0	0	4	13	137	39	105	32	6	5	7	5	7	10	40	8	11	3	2	591
592	0	0	4	16	129	83	121	15	10	6	10	5	11	12	54	13	14	1	1	592
593	0	0	4	16	134	64	111	25	9	5	9	6	12	12	53	12	14	2	2	593
594	0	0	4	16	136	86	125	23	11	6	10	6	12	12	57	15	16	1	1	594
595	1	0	4	16	129	71	91	19	5	6	9	4	6	11	41	8	9	1	3	595
596	0	0	4	16	134	81	116	17	9	7	9	5	12	12	54	15	12	1	1	596
597	1	0	4	16	137	43	110	36	8	5	8	5	9	12	47	10	12	3	2	597
598	1	0	4	16	137	68	102	9	4	5	8	5	10	11	42	9	9	2	3	598
599	1	0	4	16	146	24	79	15	2	5	6	1	4	4	22	7	7	3	3	599
600	0	0	4	16	132	66	105	17	8	3	10	5	8	10	44	10	10	2	2	600
601	1	0	4	16	134	81	120	18	8	5	11	5	10	11	50	10	12	1	1	601
602	0	0	4	16	131	77	112	23	10	7	10	6	11	10	54	13	15	1	2	602
603	1	0	4	16	129	93	110	14	10	7	9	5	12	11	54	14	15	1	2	603
604	1	0	4	16	133	43	102	19	6	2	6	5	4	10	33	4	11	3	3	604
605	1	0	4	16	130	49	97	21	8	4	8	4	7	12	43	12	8	3	3	605
606	1	0	4	16	136	24	108	40	10	4	9	2	8	10	43	10	12	3	2	606
607	0	0	4	16	163	35	64	24	3	3	4	5	5	1	21	6	7	3	3	607
608	0	0	4	16	133	75	120	16	9	6	10	5	12	12	54	13	14	1	1	608
609	0	0	4	16	129	72	122	25	11	6	9	6	10	12	54	13	15	1	1	609
610	0	0	4	16	136	91	113	12	10	6	11	5	10	12	54	12	15	1	2	610
611	0	0	4	16	131	91	110	15	9	4	9	5	9	12	48	10	11	1	2	611
612	1	0	4	16	133	21	102	28	6	4	6	4	2	8	30	6	10	3	3	612
613	1	0	4	16	139	61	115	25	11	6	10	6	8	10	51	13	14	2	2	613
614	1	0	4	16	129	81	119	14	11	6	11	6	11	12	57	14	15	1	1	614

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
615	0	0	4	16	135	61	111	19	7	4	8	5	6	8	38	11	9	2	2	615
616	1	0	4	16	128	97	135	17	11	7	11	5	12	12	58	14	16	1	1	616
617	1	0	4	16	140	54	80	27	5	5	8	5	4	7	34	8	7	2	3	617
618	0	0	4	16	134	91	114	21	8	7	8	6	11	9	49	10	15	1	2	618
619	1	0	4	16	129	41	50	24	3	3	4	0	3	5	18	4	3	3	3	619
620	1	0	4	16	138	68	130	16	8	5	11	3	7	11	45	9	13	1	1	620
621	1	0	5	17	132	49	112	58	9	6	8	6	8	11	48	11	12	3	2	621
622	0	0	5	17	134	55	117	22	5	2	8	6	8	9	38	5	12	2	1	622
623	1	1	5	17	142	94	113	22	6	4	4	4	7	5	30	7	9	1	2	623
624	1	0	5	17	136	55	82	25	7	4	7	6	5	12	41	9	10	2	3	624
625	1	0	5	17	139	91	118	28	11	4	9	6	10	12	52	12	15	1	1	625
626	1	0	5	17	132	54	143	24	8	6	5	5	7	12	43	11	12	2	1	626
627	1	0	5	17	135	81	123	32	10	7	10	5	10	10	52	14	15	1	1	627
628	0	0	5	17	129	39	80	33	3	3	4	4	6	6	26	4	7	3	3	628
629	1	0	5	17	137	55	95	30	7	4	7	4	6	8	36	10	8	2	3	629
630	1	0	5	17	129	36	105	26	5	3	5	4	6	7	30	6	8	3	2	630
631	0	0	5	17	131	49	105	28	8	6	8	4	7	12	45	10	12	3	2	631
632	1	0	5	17	131	68	106	25	7	3	6	3	3	11	33	8	5	2	2	632
633	0	0	5	17	132	34	112	27	4	3	3	3	2	10	25	5	3	3	2	633
634	0	0	5	17	134	52	93	34	5	3	9	3	7	9	36	8	6	2	3	634
635	0	0	5	17	134		118	40	8	4	8	6	11	11	48	10	13	0	1	635
636	1	0	5	17	129	58	114	25	7	5	9	6	13	11	51	13	13	2	2	636
637	1	0	5	17	138	47	91	27	3	5	6	2	5	4	25	5	8	3	3	637
638	0	0	5	17	132	34	110	37	5	3	7	2	4	11	32	3	7	3	2	638
639	1	0	5	17	134	81	123	33	11	6	10	6	10	12	55	13	16	1	1	639
640	0	0	5	17	127	54	98	26	6	1	4	2	3	7	23	5	4	2	3	640
641	0	0	5	17	136	47	86	30	5	3	7	4	7	8	34	9	7	3	3	641
642	0	0	5	17	138	72	130	31	8	5	9	5	12	11	50	11	13	1	1	642

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
643	0	0	5	17	129	44	119	47	8	3	7	4	2	8	32	6	11	3	1	643
644	0	0	5	17	136	86	106	23	9	7	8	5	11	12	52	12	13	1	2	644
645	0	0	5	17	132	54	109	24	5	2	7	4	8	8	34	7	7	2	2	645
646	0	0	4	17	139	61	125	35	7	6	10	4	7	11	45	8	11	2	1	646
647	0	0	5	17	130	51	98	28	8	5	8	6	8	8	43	10	12	2	3	647
648	0	0	5	17	128	81	135	23	11	7	10	6	12	12	58	16	16	1	1	648
649	0	0	5	20	140	41	104	47	10	4	10	5	8	11	48	14	12	3	2	649
650	1	0	5	20	136	34	125	49	6	6	6	4	8	12	42	7	11	3	1	650
651	1	0	5	20	134	54	91	35	4	3	5	3	4	6	25	4	9	2	3	651
652	1	0	5	20	140	86	98	23	10	4	11	6	11	12	54	13	13	1	3	652
653	0	0	5	20	131	75	115	30	7	6	8	6	9	12	48	10	13	1	2	653
654	0	0	5	20	129	66	112	34	9	5	9	6	10	11	50	12	12	2	2	654
655	0	0	5	20	134	49	123	39	7	4	9	5	6	12	43	9	13	3	1	655
656	0	0	5	20	127	92	117	29	11	5	9	6	9	11	51	13	12	1	1	656
657	1	0	5	20	141	57	109	35	8	6	9	5	10	10	48	11	13	2	2	657
658	0	0	5	20	133	93	114	33	10	4	10	6	8	12	50	14	12	1	2	658
659	0	0	5	20	129	58	119	39	5	6	8	2	8	10	39	7	11	2	1	659
660	0	0	5	20	133	61	102	26	8	5	9	5	8	12	47	11	12	2	3	660
661	1	0	5	20	136	54	64	28	7	4	6	4	8	9	38	9	12	2	3	661
662	0	0	5	20	136	75	114	29	10	5	10	4	9	12	50	11	14	1	2	662
663	1	0	5	20	134	93	116	21	10	6	10	6	11	12	55	12	15	1	1	663
664	1	0	5	20	133	81	104	30	7	4	8	6	11	11	47	11	13	1	2	664
665	0	0	5	20	131	34	108	41	6	3	7	4	4	9	33	6	6	3	2	665
666	1	0	5	20	140	39	95	33	7	3	6	4	3	8	31	4	7	3	3	666
667	1	0	5	20	135	66	101	28	11	5	8	6	9	12	51	11	14	2	3	667
668	0	0	5	20	137	81	116	28	10	6	9	6	13	12	56	14	14	1	1	668
669	0	0	5	20	132	47	110	32	4	3	8	4	7	10	36	8	9	3	2	669
670	1	0	5	20	135	61	117	34	10	5	9	4	7	10	45	11	13	2	1	670

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
671	1	0	5	20	138	83	130	25	11	6	8	5	10	11	51	13	11	1	1	671
672	1	0	5	20	135	64	106	38	8	5	8	3	6	12	42	8	11	2	2	672
673	0	0	5	20	140	75	114	29	8	5	11	4	8	11	47	11	11	1	2	673
674	0	0	5	20	138	77	122	20	9	5	10	4	7	12	47	10	12	1	1	674
675	1	0	5	20	133	72	132	23	11	6	11	6	11	12	57	14	16	1	1	675
676	1	0	5	20	136	72	125	43	6	4	10	6	10	12	48	8	14	1	1	676
677	0	0	5	20	132	58	108	30	9	4	7	6	10	12	48	11	12	2	2	677
678	0	0	5	20	128	49	106	41	8	3	9	4	7	9	40	9	8	3	2	678
679	0	0	5	20	133	71	106	25	10	6	11	5	10	11	53	14	13	1	2	679
680	1	0	5	20	136	47	84	53	6	3	4	3	5	3	24	7	7	3	3	680
681	1	0	5	22	135	31	114	31	4	4	7	4	4	7	30	8	5	3	3	681
682	0	0	5	22	135	55	114	24	7	5	5	5	9	8	39	6	11	2	2	682
683	0	0	5	22	134	62	116	45	8	2	6	4	6	9	35	9	9	2	1	683
684	1	0	5	22	131	36	74	45	8	4	3	3	4	4	26	8	7	3	3	684
685	0	0	5	22	131	57	112	53	3	3	3	2	1	7	19	3	6	2	2	685
686	0	0	5	22	133	52	120	47	9	5	10	5	11	11	51	13	14	2	1	686
687	1	0	5	22	130	58	112	36	10	4	10	6	7	11	48	9	14	2	2	687
688	0	0	5	22	135	54	104	42	10	3	10	6	9	11	49	11	15	2	2	688
689	1	0	5	22	131	34	81	43	7	2	7	3	6	9	34	6	12	3	3	689
690	1	0	5	22	132	39	106	40	7	4	6	4	8	9	38	6	12	3	2	690
691	1	0	5	22	133	34	80	33	4	4	3	2	5	5	23	4	5	3	3	691
692	1	0	5	22	133	83	120	34	10	6	10	4	12	12	54	13	14	1	1	692
693	0	0	5	22	129	58	117	28	7	3	8	3	8	11	40	9	11	2	1	693
694	1	0	5	22	139	71	97	30	10	4	9	5	10	12	50	11	13	1	3	694
695	0	0	5	22	131	71	102	49	11	7	10	5	12	12	57	15	14	1	3	695
696	0	0	5	22	137	75	110	38	7	6	11	4	10	12	50	13	13	1	2	696
697	0	0	5	22	129	68	108	36	8	5	9	5	8	12	47	8	13	2	2	697
698	0	0	5	22	127	62	102	38	10	6	10	5	10	11	52	14	13	2	3	698

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
699	1	0	5	22	131	49	83	30	5	5	6	3	7	7	33	6	8	3	3	699
700	1	0	5	22	133	71	80	23	9	3	10	5	8	12	47	11	11	1	3	700
701	0	0	5	22	135	44	95	46	6	3	4	3	3	7	26	6	5	3	3	701
702	0	0	5	22	127	64	96	26	9	5	9	6	10	12	51	13	13	2	3	702
703	1	0	5	22	136	39	101	39	2	3	9	5	7	9	35	5	10	3	3	703
704	1	0	5	22	129	51	95	32	10	5	8	3	7	11	44	10	13	2	3	704
705	1	0	6	23	130	55	133	43	8	6	8	6	11	11	50	12	14	2	1	705
706	1	0	6	23	135	62	105	29	4	5	8	4	8	9	38	8	7	2	2	706
707	1	0	6	23	134	91	120	37	10	5	11	6	12	12	56	15	15	1	1	707
708	1	0	6	23	134	36	114	43	8	5	5	6	8	12	44	11	11	3	2	708
709	0	0	6	23	140	62	118	23	11	7	10	5	10	11	54	15	14	2	1	709
710	1	0	6	23	140	51	92	35	6	5	9	3	7	10	40	11	4	2	3	710
711	0	0	6	23	136	112	125	28	11	6	9	6	13	12	57	15	14	1	1	711
712	0	0	6	23	131	24	110	45	6	5	9	3	5	10	38	10	5	3	2	712
713	0	0	6	23	132	66	116	54	5	5	7	5	6	8	36	8	7	2	1	713
714	1	0	6	23	137	39	110	34	6	5	7	3	3	11	35	8	8	3	2	714
715	1	0	6	23	137	21	108	60	7	4	5	5	9	9	39	7	10	3	2	715
716	0	0	6	23	134	82	132	36	10	6	9	6	13	12	56	15	15	1	1	716
717	1	0	6	23	133	22	137	52	3	6	6	6	6	10	37	7	8	3	1	717
718	0	0	6	23	135	82	100	38	3	1	6	2	4	9	25	5	3	1	3	718
719	0	0	6	23	145	21	68	37	5	2	2	2	5	6	22	7	4	3	3	719
720	1	0	6	23	129	24	96	44	5	3	4	5	8	5	30	8	8	3	3	720
721	0	0	6	23	131	86	100	28	9	5	10	5	11	12	52	12	16	1	3	721
722	1	0	6	23	133	24	120	40	7	4	7	5	7	11	41	6	11	3	1	722
723	0	0	6	23	127	61	114	23	4	4	9	3	3	9	32	6	7	1	2	723
724	0	0	6	12	133	47	97	36	8	4	6	2	8	10	38	9	8	3	3	724
725	0	0	6	23	127	39	119	29	8	4	10	6	8	11	47	8	15	3	1	725
726	0	0	6	23	137	49	122	25	7	3	10	3	5	12	40	8	10	3	1	726

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
727	0	0	6	23	133	62	123	36	7	4	8	4	6	12	41	6	11	2	1	727
728	1	0	6	24	152	41	68	38	4	1	6	3	1	7	22	6	3	3	3	728
729	1	0	6	24	130	102	127	27	11	7	10	6	10	11	55	15	14	1	1	729
730	1	0	6	24	138	50	92	41	5	2	8	5	6	10	36	5	9	2	3	730
731	0	0	6	24	136	58	125	34	10	6	9	4	8	11	48	12	12	2	1	731
732	1	0	6	24	137	31	110	30	4	4	6	1	6	9	30	7	7	3	2	732
733	0	0	6	24	134	62	104	37	9	4	10	3	11	11	48	13	11	2	2	733
734	0	0	6	24	131	54	118	28	5	4	4	5	7	8	33	8	5	2	1	734
735	1	0	6	24	146	21	112	37	6	3	7	4	5	7	32	8	6	3	2	735
736	1	0	6	24	138	61	110	30	9	4	10	5	12	12	53	13	13	2	2	736
737	1	0	6	24	127	34	135	42	8	3	8	4	7	8	38	8	9	3	1	737
738	1	0	6	24	137	21	98	35	1	4	8	2	4	6	25	4	7	3	3	738
739	1	0	6	24	133	31	114	50	9	4	11	6	10	12	52	13	12	3	2	739
740	1	0	6	24	137	61	116	33	7	3	8	5	6	12	41	7	12	2	1	740
741	1	0	6	24	141	45	96	29	6	5	6	5	8	8	38	10	6	3	3	741
742	1	0	6	24	132	39	93	29	4	2	3	3	5	9	26	4	7	3	3	742
743	0	0	6	24	129	29	82	29	7	3	7	2	5	5	29	5	8	3	3	743
744	1	0	6	24	139	60	129	29	8	7	7	5	10	12	49	10	13	2	1	744
745	0	0	6	24	136	68	106	29	8	5	9	6	10	10	48	8	15	2	2	745
746	0	0	6	24	127	58	125	34	7	4	8	3	7	8	37	13	5	2	1	746
747	1	0	6	24	138	43	116	34	6	3	4	3	5	10	31	6	10	3	1	747
748	1	0	6	24	137	24	125	39	5	2	5	5	2	12	31	3	5	3	1	748
749	0	0	6	24	142	46	97	38	9	5	9	6	7	10	46	14	10	3	3	749
750	0	0	6	24	136	58	114	36	9	4	8	4	8	11	44	8	12	2	2	750
751	0	0	6	24	137	21	100	38	5	3	8	4	5	11	36	9	6	3	3	751
752	0	0	6	24	133	61	117	37	10	7	9	5	9	8	48	13	12	2	1	752
753	1	0	7	28	127	52	101	39	8	4	9	4	6	11	42	10	10	2	3	753
754	1	0	7	28	140	39	91	35	7	3	6	4	7	9	36	8	9	3	3	754

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
755	0	0	7	28	140	52	96	44	4	1	10	5	8	11	39	6	10	2	3	755
756	0	0	7	28	128	81	125	36	11	6	9	6	9	12	53	13	14	1	1	756
757	1	0	7	28	129	72	129	39	8	5	9	5	9	12	48	10	13	1	1	757
758	0	0	7	28	139	36	109	40	5	3	4	5	5	6	28	8	6	3	2	758
759	1	0	7	28	135	51	126	33	6	5	9	5	5	8	38	8	10	2	1	759
760	1	0	7	28	129	64	91	30	9	5	7	6	8	12	47	9	12	2	3	760
761	1	0	7	28	134	52	106	40	8	4	9	4	4	11	40	8	9	2	2	761
762	1	0	7	28	122	34	113	44	3	3	3	2	3	5	19	4	1	3	2	762
763	1	0	7	28	136	62	108	34	10	6	7	5	8	11	47	12	11	2	2	763
764	0	0	7	28				34	9	5	11	5	12	12	54	12	13	0	0	764
765	1	0	7	28	136	75	101	23	7	6	9	6	8	12	48	9	13	1	3	765
766	0	0	7	28	136	66	113	29	6	5	9	6	10	10	46	8	13	2	2	766
767	0	0	7	28	136	26	85	16	5	2	5	2	6	6	26	4	8	3	3	767
768	0	0	7	28	119	57	96	28	6	3	7	3	9	8	36	10	6	2	3	768
769	0	0	7	28	129	31	114	32	8	5	9	6	11	12	51	11	14	3	2	769
770	1	0	7	28	140	83	100	25	9	6	10	5	11	11	52	13	13	1	3	770
771	1	0	7	28	139	93	129	17	10	6	10	6	7	12	51	10	16	1	1	771
772	0	0	7	28	128	75	106	26	8	6	8	6	10	11	49	12	14	1	2	772
773	1	0	7	28	144	32	74	33	8	4	5	2	2	6	27	7	7	3	3	773
774	1	0	7	28	148	22	78	29	5	2	5	4	5	7	28	6	11	3	3	774
775	0	0	7	28	127	93	129	20	8	3	10	5	12	12	50	12	11	1	1	775
776	1	0	8	32	137	49	108	46	1	2	4	5	4	8	24	4	6	3	2	776
777	0	0	8	32	135	83	123	30	10	6	8	5	10	12	51	12	16	1	1	777
778	0	0	8	32	135	49	104	50	3	3	9	4	6	10	35	7	6	3	2	778
779	0	0	8	32	128	77	105	55	6	4	4	4	5	10	33	6	9	1	2	779
780	0	0	8	32	136	41	113	55	8	3	6	5	6	9	37	10	8	2	2	780
781	0	0	8	32	132	72	106	60	10	4	7	5	8	12	46	11	11	1	2	781
782	0	0	8	32	130	55	100	30	2	1	5	2	3	8	21	1	5	2	3	782

TABLE 25--Continued

I.D.	SEX	TG	SCH	TCH	AGE	ACH	NV	MIN	ST1	ST2	ST3	ST4	ST5	ST6	TOT	SS	SC	AG	IQG	I.D.
783	1	0	8	32	133	62	100	50	6	6	6	6	7	10	41	9	9	2	3	783
784	0	0	8	32	129	36	119	45	8	3	7	4	10	9	41	10	9	3	1	784
785	0	0	8	32	134	66	102	46	3	4	2	2	5	4	20	4	4	2	3	785
786	0	0	8	32	133	49	117	35	6	3	6	4	8	9	36	6	9	3	1	786
787	0	0	8	32	130	49	102	55	7	0	6	4	8	6	31	9	8	3	3	787
788	0	0	8	32	133	71	132	30	8	5	9	6	12	12	52	11	15	1	1	788
789	1	0	8	32	137	86	130	35	11	7	10	5	12	12	57	15	16	1	1	789
790	1	0	8	32	131		109	50	11	3	9	6	10	12	51	12	12	0	0	790
791	0	0	8	32	135	68	95	50	9	4	9	5	10	11	48	11	12	2	3	791
792	1	0	8	32		72		30	8	4	7	1	5	9	34	6	10	1	0	792
793	1	0	8	32	135	54	109	55	5	4	7	4	5	10	35	7	10	2	2	793
794	1	0	8	32		57		35	6	3	5	4	6	6	30	6	7	2	0	794
795	1	0	8	32	131	84	118	50	8	4	9	5	8	11	45	8	14	1	1	795
796	0	0	8	32	129	75	109	35	10	7	8	5	10	11	51	14	13	1	2	796
797	1	0	8	32	143	62	104	60	8	5	7	5	6	9	40	10	9	2	2	797

REFERENCES

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Adler, Mortimer J. How to Read a Book. New York: Simon and Schuster, 1940.

Alshan, L. M. "A Factor-Analytic Study of Items Used in the Measurement of Some Fundamental Factors of Reading Comprehension." Unpublished .D. dissertation, Teachers College, Columbia University, 1964.

Anderson, A. W. "Directing Reading Comprehension." Reading Teacher. 13:206-207, 211, February, 1960.

Ballard, G. L. "The Effect of Guiding and Motivating Questions Upon the Reading Comprehension of Fourth and Fifth Grade Pupils." Dissertation Abstracts. 25:4568, 1965.

Barrett, Thomas C. "Taxonomy of Cognitive and Affective Dimensions of Reading Comprehension." Unpublished paper.

Beaucamp, Wilbur L. "A Preliminary Experimental Study of Techniques in the Mastery of Subject Matter in Elementary Physical Science." Studies in Secondary Education I, Supplementary Educational Monographs. 24:47-87, 1925.

Berlyne, D. B. "Conditions of Prequestioning and Retention of Meaningful Material." Journal of Educational Psychology. 57:128-132, 1966.

Betts, Emmett A. "Directed Reading Activities." Educational Administration and Supervision. 30:67-74, November, 1944.

Bloom, Benjamin S., and others. Taxonomy of Educational Objectives Handbook I: Cognitive Domain. New York: David McKay Company Inc., 1956.

Bloomer, R. H. and A. J. Heitzman. "Pretesting and the Efficiency of Paragraph Meaning." Journal of Educational Psychology. 50:219-233, March, 1965.

Bruner, Jerome. The Process of Evaluation. Massachusetts: Harvard University Press, 1960.

Chall, Jeanne S. Learning to Read: The Great Debate. New York: McGraw-Hill Book Company, 1967.

Christensen, A. J. and R. Stordahl. "The Effect of Organizational Aids on Reading Comprehension." Journal of Educational Psychology. 46:65-74, February, 1955.

Cleland, Donald L. "A Construct of Comprehension." In Mildred A. Dawson (Ed.), Developing Comprehension Including Critical Reading. Newwark, Delaware: International Reading Association, 1968.

Davis, F. B. "Fundamental Factors of Comprehension in Reading." Unpublished Ph.D. dissertation, Harvard University, 1941.

Davis, F. B. Identification and Measurement of Reading Skills of High School Students. Philadelphia: University of Pennsylvania, 1967.

Davis, F. B. "Psychometric Research on Comprehension in Reading." Reading Research Quarterly. 3:628-678, 1968a.

Davis, F. B. "Research in Comprehension in Reading." Reading Research Quarterly. 3:499-545, 1968b.

Davis, F. B. "Psychometric Research on Comprehension in Reading." In F. B. Davis (Ed.), The Literature of Research in Reading, with Emphasis on Models. New Brunswick, New Jersey: Graduate School of Education, Rutgers University, 1971.

Dewey, John C. "The Acquisition of Facts as a Measure of Reading Comprehension." Elementary School Journal. 35:346-348, 1935.

Distad, H. W. "A Study of the Reading Performance of Pupils Under Different Conditions on Different Types of Materials." Journal of Educational Psychology. 18:247-258, April, 1927.

Durkin, Delores. Teaching Them to Read. Boston: Allyn and Bacon, Inc., 1970.

Edwards, Allen L. Statistical Analysis. New York: Holt, Rinehart and Winston, 1965.

Farr, Roger. Reading: What Can Be Measured? Newark, Delaware: International Reading Association Research Fund, 1969.

Frase, L. T. "Questions as Aids to Reading: Some Research and a Theory." American Educational Research Journal. 5:319-332, 1968.

Gates, Arthur I. "Character and Purposes of the Yearbook." Reading in the Elementary School, Forty-eighth Yearbook of the National Society for the Study of Education, Part II. Chicago: University of Chicago Press, 1949.

Germane, C. E. "Outlining and Summarizing Compared with Rereading as Methods of Studying." Report of the Society's Committee on Silent Reading, Twentieth Yearbook of the National Society for the Study of Education, Part II. Chicago: University of Chicago Press, 1921.

Geyer, John J. "Comprehension and Partial Models Related to the Reading Process." Reading Research Quarterly. 4:541-587, 1972.

Goodman, K. S. "Reading: A Psycholinguistic Guessing Game." In H. Singer and R. B. Rudell (Eds.), Theoretical Models and Processes of Reading. Newark, Delaware: International Reading Association, 1970.

Goudey, Charles E. "A Comparison of Children's Reading Performance Under Directed and Non-Directed Conditions." Unpublished Ph.D. dissertation, University of Minnesota, 1968.

Goudey, Charles E. "Reading - Directed or Not?" Elementary School Journal. 60:245-247, February, 1970.

Grant, Eugene F. and Marcia Hall. "The Effect of Purposeful Reading on Comprehension at Differing Levels of Difficulty." Paper presented at the International Reading Association Conference, May, 1967. ERIC ED 015 828.

Gray, William S. "Principles of Method of Teaching Reading, as Derived from Scientific Investigations." Eighteenth Yearbook of the National Society for the Study of Education, Part II. Bloomington, Illinois: Public School Publishing Co., 1919.

Gray, William S. "Teaching of Reading." Encyclopedia of Educational Research, (3rd Edition). New York: MacMillan Co., 1950.

Harris, Larry A. and Carl B. Smith. Reading Instruction Through Diagnostic Teaching. New York: Holt, Rinehart and Winston, Inc., 1972.

Hays, W. L. Statistics for Psychologists. New York: Holt, Rinehart and Winston, Inc., 1963.

Henderson, E. H. "A Study of Individually Formulated Purposes for Reading in Relation to Reading Achievement Comprehension and Purpose Attainment." Dissertation Abstracts. 24:5529, 1964.

Holmes, J. A. "The Substrata-Factor Theory of Reading: Some Experimental Evidence." In H. Singer and R. B. Ruddell (Eds.), Theoretical Models and Processes of Reading. Newark, Delaware: International Reading Association, 1970.

Holms, E. "Reading Guided by Questions Versus Careful Reading and Rereading Without Questions." School Review. 39:361-371, May, 1931.

Kerfoot, James F. "Problems and Research Considerations in Reading Comprehension." The Reading Teacher. 18:250-256, January, 1965.

Kingston, Albert J., Jr. "The Measurement of Reading Comprehension." In Roger Farr (Ed.), Measurement and Evaluation of Reading. New York: Harcourt, Brace and World, Inc., 1970.

Lorge, Irving. "The Teacher's Task in the Development of Thinking." The Reading Teacher. 13:170-175, February, 1960.

Naslund, Robert A., Louis P. Thorpe and D. Welty Lefever. Achievement Series: Form E/Blue Level. Chicago: Science Research Associates, Inc., 1971.

Noggle, Nelson L. Using Test Results: Achievement Series. Chicago: Science Research Associates, Inc., 1972.

Petre, Richard M. "Quantity, Quality, and Variety of Pupil Responses During an Open-communication Structured Group Directed Reading-Thinking Activity and a Closed Communication Structured Group Directed Reading Activity." Paper presented at the annual meeting of the International Reading, Association, April, 1971. ERIC ED 071 053.

Pratt, Edward. "Reading as a Thinking Process." Vistas in Reading. International Reading Association Conference Proceedings, Part I, Newark, Delaware, 1966.

Rothkopf, E. Z. "Learning from Written Instructive Materials: An Exploration of the Control of Inspective Behavior by Test-like Events." American Educational Research Journal. 3:24-249, 1966.

Russell, David H. "Research on the Processes of Thinking with Some Applications to Reading." Elementary English. 42:370-378, 432, April, 1965.

Sanders, H. Classroom Questions, What Kinds? New York: Harper and Row Publishers, 1966.

Science Research Associates. Achievement Series: Guide to the Use of Test Results - Preliminary Edition. Chicago: Science Research Associates, Inc., 1971a.

Science Research Associates. Achievement Series: Multilevel Edition Technical Brief. Chicago: Science Research Associates, Inc., 1971b.

Science Research Associates. Achievement Series: Multilevel Examiner's Manual. Chicago: Science Research Associates, Inc., 1971c.

Science Research Associates. Achievement Series: Multilevel Test Coordinator's Handbook. Chicago: Science Research Associates, Inc., 1971d.

Shores, Harlan J. "Reading of Science for Two Separate Purposes as Perceived by Sixth Grade Students and Able Adult Readers." Elementary English. 37:461-468, November, 1960.

Smith, Helen K. "Sequence in Comprehension." In Helen M. Robinson (Ed.), Sequential Development of Reading Abilities. Chicago: University of Chicago Press, 1960.

Smith, Helen K. "Instruction of High School Students in Reading for Different Purposes." Cooperative Research Project No. 1714. Chicago: University of Chicago Press, 1966.

Smith, Helen K. "The Responses of Good and Poor Readers When Asked to Read for Different Purposes." Reading Research Quarterly. 3:53-83, 1967.

Smith, Nila Banton. Reading Instruction for Today's Children. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963.

Smith, Nila Banton. American Reading Instruction. Newark, Delaware: International Reading Association, 1965.

Snavely, A. E. "The Effectiveness of Purpose Statements and Marginal Notes as Aids to Reading Comprehension." Dissertation Abstracts. 22:2711, 1963.

Spache, George. Toward Better Reading. Champaign, Illinois: Garrard Publishing Company, 1962.

Stark, Thomas F. "Staffing Schools in the Twin Cities Metropolitan Area - Part I" 1973-74 Report to member school districts. Educational Research and Development Council of the Twin Cities Metropolitan Area, Inc. St. Paul: University of Minnesota, 1973.

Stauffer, Russell G. Directing Reading Maturity as a Cognitive Process. New York: Harper and Row, Publishers, 1969a.

Stauffer, Russell G. Teaching Reading as a Thinking Process. New York: Harper and Row, Publishers, 1969b.

Thomas, Ellen Lomar and H. Alan Robinson. Improving Reading in Every Class - A Sourcebook for Teachers. Boston: Allyn and Bacon, Inc., 1972.

Thorndike, Edward L. "Reading as Reasoning: A Study of Mistakes in Paragraph Reading." Journal of Educational Psychology. 8:323-332, 1917a.

Thorndike, Edward L. "The Psychology of Thinking in the Case of Reading." Psychological Review. 24:220-234, 1917b.

Thorndike, Edward L. "The Understanding of Sentences." Elementary School Journal. 18:98-114, 1917c.

Thorndike, Robert L. and Elizabeth Hagen. Examiner's Manual: Cognitive Abilities Test. Boston: Houghton Mifflin Company, 1971.

Washburne, J. N. "The Use of Questions in Social Science Material." Journal of Educational Psychology. 20:321-359, 1929.

Weaver, W. W., and A. J. Kingston. "Questioning in Content Reading." The Journal of Reading. 11:140-143, 1967.

Weintraub, Samuel. "The Question as an Aid in Reading." The Reading Teacher. 22:751-755, May, 1969.

Williams, Fredrick. Reasoning with Statistics. New York: Holt, Rinehart and Winston, Inc., 1968.

Williams, John D., Steven D. Harlow and Samuel Houston. Action Research for the Classroom Teacher. DuBuque, Iowa: Kendall/Hunt Publishing Company, 1969.

Yoakam, G. A. and C. Truby. "The Effects of Certain Practice Exercises in Reading." School of Education Journal, University of Pittsburg, 1:60-61, 1926.