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The relationship of second-grade children's attitude toward reading and achievement.

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Thesis

The Relationship of Second-Grade Children's Attitude Toward Reading and Achievement

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CHAPTER I

Introduction

This thesis is a follow-up of the first-grade success study whereby a planned reading readiness program was started in September with all the first-grade children in Natick. It is an attempt to discover the attitudes toward reading and achievement in reading of these children at the middle of grade two. In addition, the following factors - applied phonics and hearing sounds in words - will be studied.

Some people feel that children in grade one should not be started immediately on a planned reading program. Previous research has indicated that many children come to school with much knowledge of letter names and sounds and a good readiness background. Therefore this study is an attempt to compare the attitudes and achievement of children who had such a program with children who did not.
CHAPTER II

Summary of Previous Research

This is a comparative study of reading achievement of two groups of second-grade children who had had different reading programs in grade one. The research reported will be concerned with factors related to success in primary reading including auditory and visual discrimination, knowledge of letter names, interests and attitudes, and retention.

Reading is an important subject in the curriculum because it is the key to a knowledge of every subject and a prerequisite to understanding, appreciation, and wisdom. There have been feelings and controversy concerning different skills which contribute to reading ability.

Throughout the nineteenth century oral reading held a place of pre-eminence in elementary education. Oral reading was emphasized to such an extent that the real values of reading were neglected. According to Gray's report the evils resulting from this practice were pointed out by Horace Mann as early as 1838. Reports proved that eleven out of every twelve children did not understand the meaning of the words they read, master the sense of reading lessons, or learn to appreciate reading as the key to knowledge. Pretty sounds were the values of reading ability.

Emphasis in teaching the subject changed rapidly from oral to silent reading at the turn of the century when these errors of teaching were published. It was noted in 1915, by S. H. Clark, a leading authority in oral interpretation.

"Beautiful as is the adequate vocal interpretation of literature, it is of infinitesimally less worth in a system of education than the ability to interpret silently."

Auditory Discrimination

Studies were directed to discover the relative effects of the phonetic and non-phonetic methods of instruction on reading in the first grades under the direction of Currier and Duguid. For the purpose of experiment two classes of equal size and of equal average ability were formed in each of two grades. In each grade one of the classes received thorough phonetic drill, while the other was taught by a method described by these investigators as "quick-perception," and "sense content," without any use of phonics. Throughout the entire experiment the children were carefully observed by the teachers and results were recorded. However, no statistical records were made of the results. It was observed that the classes having no phonics enjoyed reading for the sake of study, but were less careful and less correct than the phonic classes in regard to work pronunciation. The children


in the non-phonics classes often substituted words from their own vocabulary when attacking an unknown word, but read more swiftly and with more expression. In June when the classes were tested on material not seen before, the results were about the same except that the classes without the phonic training were less accurate.

Observations were continued in grades three, four, and five and results were reported by Currier in 1928.1 These observations were made by the teachers on the two groups - phonic and non-phonics. In June the average ability of the classes were discovered to be on a parallel with observations similar to those reported in grade one and two. An additional observation was made that some pupils apparently possess a "natural phonic sense" and employ it in their reading. For these pupils phonic drills were found to be of very little value. Generally the drills were found to be of value, but not imperative for every child in the primary grades. Word pronunciation drills proved to be helpful, yet the phonic method as a systematic way of teaching beginning reading still fell into disfavor.2

The expansion and the enrichment of the school curriculum greatly increased the demand for efficiency in the application of silent reading. As a result teachers found it necessary to devote more effort and time in the study of silent drill. A large number of schools gave

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little or no time for the development and the refined habits involved in reading. Although at that time the National Committee on Reading\(^1\) agreed that the proportion of time spent on oral and silent reading methods in the primary grades should be about half and half, a false antagonism between oral and silent reading advocates came into being.

After 1930 educators revealed the need of a balanced reading system. The pedagogical pendulum, according to the report of Cordelia Camp,\(^2\) began to swing back from undue emphasis on silent reading toward incorporating a reasonable amount of oral reading. The importance of oral reading was stressed as valuable in the home, in the school, and in adult life. The new scientific age of talking pictures and radio made specific demands for clear enunciation, good pronunciation, and pleasing tone quality in the home and adult life. In the school, oral reading proved a valuable aid to mechanics in reading. The relation between the spoken word and its meaning is very close because it is more natural for the child to secure meanings from sound than from the printed symbol. Therefore, up to a certain point, oral reading may aid in establishing habits which are common to both oral and silent reading and the two may move along together and complement and supplement each other until the pupil can recognize words more rapidly than he can vocalize them. After this period oral reading aids in the recognition

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and pronunciation of words read silently. It further serves as a check on pronunciation and enunciations as well as on comprehension.

Gray\textsuperscript{1} stated in 1936 that the place and the value of oral reading skills merit careful and unprejudiced study. He stated that the relation between a spoken word and its meaning is so intimate that one stands in experience for the other. It follows that oral activities in early reading lessons promote rapid progress in association meanings and symbols; it aids in establishing habits of importance in both oral and silent reading.

Experimental studies show clearly that in the lower grades the basic habits involved in reading, such as accurate recognition of the identity of words, span of recognition, rate of recognition, and the progress of perceptions, are much alike in both types of reading. These habits are so essential in both kinds of reading that progress made in one type contributes to development in the other.

In phonics, the child uses the sounds of letters and letter combinations in working out the pronunciation of new words. Dolch\textsuperscript{2} asserts that considerable mental maturity is necessary for a child to apply a knowledge of sounds to aid in unlocking new words. Moreover, many English words are non-phonetic, and polysyllabic words must be divided into syllables before phonics can be applied. Nevertheless, the ability

\textsuperscript{1}William S. Gray, "The Place of Oral Reading in an Improved Program of Reading," \textit{Elementary School Journal}, 36:517-26, March 1936.

to sound out a word is a valuable technique to use when quicker methods fail, or to use with other methods.

Duffy and Durrell\textsuperscript{1} point out the common oral reading difficulties as the following: inadequate phrasing, word-by-word reading, high-pitched voice, lack of expression, poor enunciation, ignoring punctuation. However, they further state that the child will outgrow these difficulties, but they do serve as impeding habits in the child's progress.

In 1940, Murphy and Junkins\textsuperscript{2} studied the effectiveness of auditory and visual discrimination of word elements and the effect upon learning rate. A program was set up with thirty ten-minute exercises in auditory discrimination and an equal amount of exercises in visual discrimination. The two sets of exercises were evaluated separately to determine their effectiveness. The auditory work consisted of exercises in initial and final consonant sounds and blends. The exercises in visual discrimination consisted of matching letters, matching words, finding words in context, and copying letters and words.

One hundred and fifty children who had made little or no progress in reading were selected. This group consisted of children from ten different classrooms. The children were distributed on the basis of chronological age, mental age, and sight vocabulary. One group of

\textsuperscript{1}Donald D. Durrell and Gertrude B. Duffy, "Third Grade Difficulties in Oral Reading," \textit{Education}, 56:37-40, September 1935.

\textsuperscript{2}Helen A. Murphy and Kathryn M. Junkins, "Increasing the Rate of Learning in First Grade Reading," \textit{Education}, 62:37-39, September 1941.
fifty was given exercises in auditory discrimination; the second group of fifty received work in visual discrimination, while the third group acted as a control group and continued with their usual work.

After a period of six weeks, the groups were tested. Those children who were given the exercises in visual discrimination made the most progress. The auditory discrimination group ranked next, while the control group made little or no progress. The learning rate for the two experimental groups had doubled. However, the control group showed only a slight increase.

In a study of children's hearing, as it is related to reading, Kennedy\(^1\) found there are important differences in the mean auditory acuity of children between the ages of six and fifteen. However, the differences are more notable in six to seven age group.

An experiment to show the relationship of phonic ability and reading was completed by Tiffen and McKinnis.\(^2\) In this study, each child was given an informal phonic test and two reading tests. The results showed that phonic ability and reading success were significantly related. They concluded that a reading program without provision for a mastery of phonic principles was inadequate.


Bond and Bond\textsuperscript{1} summarized their findings in the area of auditory discrimination as follows:

"Inasmuch as the ability to make fine discriminations in the auditory pattern of words is needed, and as some children have not developed the skill in this ability that is necessary for generalizing in reading, some need training in oral word discrimination before or during initial instruction in reading. Here the tasks are to teach the children that words are made up of sounds and to get them to be alert to and to attend to similarities and differences in the sounds of words."

Betts\textsuperscript{2} states that

"Accurate auditory discrimination contributes to good speech habits and to an awareness of speech sounds so essential to phonetic insight," and "in view of this fact, it is clear that inaccurate auditory discrimination may contribute to lack of reading readiness or to a reading deficiency."

Murphy\textsuperscript{3} in 1943 made a comprehensive study in which 540 children in first grades participated. Four groups were set up: The first group received both auditory and visual training; the second group was given visual discrimination material; a third group was given auditory training; while the fourth group acted as the control group and was given no particular training.

The following are some of the important results:

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\textsuperscript{1}Guy L. Bond and Eva Bond, \textit{Teaching the Child to Read}, New York: The Macmillan Co., 1943.


1. All the experimental groups showed statistically superior results in reading achievement.

2. The individual Oral Reading Test administered in February showed the experimental groups to rank higher.

3. All experimental groups showed worthwhile increases in the rate of learning scores.

4. It appeared that sex differences in reading achievement disappeared when specific training for discrimination was given in beginning reading.

Auditory and visual training are two main elements in a reading readiness program according to Harrison. ¹ The following detailed learnings in the auditory area are important: the ability to hear and differentiate between sounds with which spoken words begin, using the most common single consonant sounds and the most common blends; and the ability to hear rhyming endings and to differentiate between non-rhyming endings in words. In the visual program, the ability to name and note likenesses and differences in single letters which are very different, somewhat similar, or highly confusing; the ability to examine a word visually, beginning at the left and observing the letters all the way through the word; and the ability to notice likenesses and differences in words that are very different, that are almost identical, and those that are commonly reversed.

Murphy reports that among factors often included in reading readiness tests and programs are mental age, various language abilities, motor skills and auditory and visual discrimination. The two which are very important are the auditory and visual discrimination. In order to ascertain strengths and weaknesses of each child, informal or standardized test may be administered. Auditory discrimination may be defined as the ability to recognize similarities and differences in sounds of words and word elements. In this training, it is well to utilize opportunities as they occur. For example, the piano can be used to illustrate varying pitch - the children might listen to loud and soft tones, beginning with wide differences and working toward tones of similar intensity. Without teaching the letter name, the children are trained to differentiate between sounds, noting their similarities and differences. First words of the same initial sound are used, then working towards the inclusion of words of varying initial sounds. Blends are avoided at this stage to avoid confusion. The teaching of final consonants is harder and the transition takes place slowly. Later exercises including both the initial and final consonants are used. This type of work is continued throughout the year, with the introduction of the letter itself as the children gain fluency in writing.

Helen A. Murphy, "Insuring Success in Beginning Reading," National Education Association Journal, 35-382-3, October, 1946.
Crossley\(^1\) studied the effect of lantern slides in developing auditory and visual discrimination. She constructed a series of lessons and found that auditory discrimination does affect beginning reading and is apparently more significant than mental age. In comparing the reading of two groups having a high mental age, but differing in abilities in auditory discrimination, there was a statistically significant difference in favor of those with high auditory scores. In all areas considered, the children subjected to the special training were superior to those of the control groups not given the special work.

Berry\(^2\) stated, "The program of reading readiness, especially the work in auditory and visual discrimination, has done much to build a background for word analysis. They show their readiness for systematic help in analysis by their spontaneous remarks, such as 'I know how you can tell house from horse,' or, 'That new word begins with the same letter that boy does."

Sister Mary Nila\(^3\) reports that since phonics is essentially learning to associate the appearance of a letter or letter combination with

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a particular sound, a child who is vague in his perception of sounds
and unable to recognize similarities and differences in sounds does
not have the basis for forming strong visual-auditory associations.
Auditory perception skill is an important element in reading readiness
and in some studies has outranked all other factors in its contribu-
tion to success in reading.

A series of research at Boston University has established the
importance of providing specific training in auditory discrimination.
According to results of Murphy and others, training in auditory
discrimination speeded up the rate of learning new words, and resulted
in significantly higher reading scores than with control groups. When
combined with training in visual perception, the results were even
clearer. Ear training was especially valuable to those whose initial
auditory discrimination scores were low, and of little help to those
whose initial scores were high.

Many other writers have reported additional findings.

Mulder and Curtin\(^2\) state: "By 1950 methods
of teaching word recognition by teaching the
sound equivalents of printed letter and phono-
grams and the technique of blending so as to
form words appeared justified. Phonetic analysis
is commonly regarded as a method of word attack.

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1 Donald D. Durrell and Helen A. Murphy, "The Auditory Discrimina-
tion Factor in Reading Readiness and Reading Disability." *Education*,
Volume 73, pp. 556-560, October 1953.

2 Robert L. Mulder and James T. Curtin, "Vocal Phonic Ability and
Silent Reading Achievement: a First Report." *Elementary School
In order to use this method effectively, children must make the proper sound-letter associations. It is therefore obvious that children must be able to hear the sound correctly if the proper association is to be made. This is the fundamental reason for the emphasis upon auditory discrimination in present-day reading programs." 

According to Austin, "Today most educators urge the use of phonics as one important aid in the teaching of reading. The importance of auditory readiness cannot be overemphasized in the modern phonetic approach to word analysis. In a well-planned program children learn to discriminate between sounds before attempting to discriminate visually between the letters representing those sounds."

Wepman suggests, "Auditory discrimination plays a vital role in good and effective early speech. The child developing it slowly will most likely be an ineffective speaker; he is also most likely to be the ineffective reader, since his difficulty in the correct articulation of sounds will be demonstrated in his oral reading."

Jones declares, "Training in auditory perception, especially sound discrimination, has become a major part of the instruction in reading readiness. Auditory, as well as visual avenues to the child's perceptive apparatus are utilized in all well-rounded reading programs."

1 Mary C. Austin, "Phonetic Elements and Principles Basic to Reading," Conf. on Reading, Univ. of Chicago, 1955, Vol. XVII (Oral Aspects of Reading), p. 51.


Dolch\(^1\) writing about phonics in grade one draws these conclusions. "We must give children the right attitudes toward school and toward reading, we must have some sounding, we must expect different progress in sounding, we must preserve children's well-rounded education. Every school system must then study its own situation and its own available materials and see how they fit these conclusions."

According to Anderson\(^2\) "The pattern of instructions most widely accepted at present follows this progression:

**Kindergarten**

Ability to hear beginning sounds in words.

**Grade 1**

Single consonants in the initial position.
The speech consonants ch, sh, th, wh.
Consonant blends in initial position, sh, sm, sn, st, bl, br, gl, kl, pl, cl.
The endings s, es, d, ed, ing.

**Grade 2**

Initial consonants and blends.
Short vowel forms.
The double vowels.

**Grade 3**

Long vowel forms.
Syllabification.
Consonants with variable sounds.
Non-phonetic but related words: caught, taught.

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Grade 4

Dictionary skills through grade 6.

Continuous reteaching of all previously taught.

As Mulder and Curtin summarize the importance of auditory discrimination this way "(1) Poor readers are deficient in the ability to synthesize phonetic elements of words into meaningful word patterns. This deficiency may be attributable to lack of training in auditory discrimination or lack of training in phonics. (2) Good readers apparently possess the ability to synthesize phonetic elements into words to a marked degree."

Visual Discrimination

Almost three-quarters of a century ago studies were being carried on in visual perception and discrimination. In 1885, scientists believed that words were not perceived as a whole, but rather each letter of a word was seen separately. Not long afterward this theory was discarded and it appeared that "termining letters" were the important factors in word recognition. Following experimentation, two German scientists concluded that in short exposures of unrelated

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2 W. A. Schmidt, "An Experimental Study in the Psychology of Reading," Supplementary Educational Monographs, University of Chicago, April, 1917, pp. 16-21.
letters, an average of four letters could be perceived. The subject usually supplied the remaining letters to fill out the word.

Cattell found it took no longer to see and name a short word than it did to see and name a letter. Words combined into sentences are seen and read twice as quickly as isolated ones. His concluding studies indicate that we read in word wholes, phrase wholes, and sentence wholes.

About this time Pillsbury contributed the observation that it is more difficult to perceive correctly when beginning letters are blurred. However, among associated words, such misprints are apt to be overlooked.

Two French scientists, Javal and Lamare, were interested in the physical facet of reading-eye movement. They found that the sweep of the eye was not one continuous motion, but actually was a series of jerks.

Tinker summarizes much of the earlier research. Zeitler believed

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5 Miles A. Tinker, "Visual Apprehension and Perception in Reading," Psychological Bulletin, 26:223-240, April, 1929.
the "dominant" letters in recognition to be the tall ones and those projecting below the lines. Messmer specified that more objective readers would quickly note the groups of less dominant letters to perceive whole words.

Erdman and Dodge\(^1\) were in accord with Cattell's theory of perception of word wholes. To them the total arrangement of a word - its length and general form - brought about recognition, not fixation upon its component parts. Their report, published in 1898, took issue with Goldscheider and Muller and showed that five times as many letters could be read in word connection as without word connection. They claimed "distinct vision of only four letters" indicates reader's attention is focused upon the text itself rather than upon content.

Griffing\(^2\) agreed that such attention upon content was essential for accuracy of perception.

Huey\(^3\) believed that there was much truth in the assumption that the perception of letters, words or phrases were the phenomena of association. In 1900 he stated that children while reading, learn to associate the sound of a letter with the shape of letter combinations, but the association between the form of the letter itself and its name


\(^3\)Edmund B. Huey, op. cit.
is not made any stronger by adolescent and adult reading, and that in the perceptual process an experienced reader makes use of many short-cuts which scientific study would have difficulty in detecting.

During this time it was generally believed by investigators that reading took place during the pauses and not during the eye-movements. In 1906 Dearborn\(^1\) stated, "It is only in the interval of rest that visual perception is possible." His experiments showed that eye-movements were so rapid that no reading could possibly take place and any difficulties in eye-movements were experienced by children over ten years of age. He primarily supported the claims of perception by wholes and warned, that in so doing, words of length, characteristic in total form, are often misread. As an example he presented 'physiology' and 'psychology'.\(^2\)

In due time the question arose as to what did take place during eye-movements. Holt and Dodge\(^3\) believed that there was merely a "visual anesthesia". Tinker\(^4\) upon testing ten students in junior and senior high school, and sixteen college students concluded: (1) Only 5.9\% of reading time is consumed by eye-movements; (2) About 94\% of

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\(^2\) Ibid.


\(^4\) Miles A. Tinker, "Visual Apprehension and Perception in Reading", Psychological Bulletin, 26:223-250, April 1929.
the time is then utilized for perception.

By 1915 there evolved an awareness of a wide variation in reading performance in children and adults. The need for centering attention upon improved training procedures, which would bring about the desired results of good reading habits, was felt.

Dallenbach\(^1\) studied the effect of consistent practice upon visual apprehension, finding that improvement was rapid at first, then tapered off. Children doing slower work made slower but greater improvement than the average children. Perhaps his most important finding was that the effects of drill persisted.

Inadequate provision for repetition in basic readers was denounced in 1927 by Dolch.\(^2\) He decried as fallacy the assumption that meeting two words an equal number of times in one reading will mean meanings will be grasped equally well.

Gates\(^3\) emphasizing the use of context in presenting word study said perception of differences in word forms must be awakened, or the reader "will have trouble and sometimes go wrong despite complete appreciation and utilization of the context clues."

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Payne, in 1930, undertook some studies in short exposure of words in reference to quick perception. How much the average child could see, at a single fixation, of isolated words and phrases was her concern. The investigation also sought to describe a procedure for giving tachistoscopic tests which would give tentative norms of performance of children in grades 2 through 6.

Buswell declared general familiarity with individual word forms would help to reduce fixation time and thus improve reading. Experiments conducted in the late 30's were the basis for his statement that many children pass through elementary school without learning effective reading habits. In 1939, in working with college students he showed that normal rapid readers had better comprehension than slow readers and that speed of recognition could be increased, not to any great extent, but of sufficient worth to justify vocabulary extension of itself.

Development of necessary background and meaning for each new concept was advocated by Hildreth. She felt that to talk to children over their heads was futile. "This suggests the need for keeping requirements of reading at the child's experience and maturity level.


2 Guy T. Buswell, "Remedial Reading at the College and Adult Level", Supplementary Educational Monographs, Univ. of Chicago, No. 50, 1939.

Children should not be given new words to master, or new concepts before having the necessary background and meaning. Do not take for granted that children will assimilate the idea without explanations and illustrations." She further says that the errors that school children make provide analytic material for evaluating their mental development, understanding the thought processes and diagnosing teaching and learning situations. Through studying such errors teachers and scientists would be less prone to attribute errors to chance, or to be baffled by mistakes children make. Instead there would be more sympathetic understanding of each child's learning difficulties. Hildreth believed that when children or adults are confronted with problems too difficult for them to solve, or simply unfamiliar words beyond their understanding and experience, they infrequently give up but rather substitute simpler mental responses for the appropriate ones. This emanated her difficulty Reduction Principle. "Such tendencies are shown in auditory and visual perception, in word meanings, in reasoning and thinking. Errors and mistakes are not random, mechanical or attributable to chance." 1

Wolfe 2 compared eighteen subjects retarded in reading with eighteen average readers on certain auditory and visual functions, fluency of verbal associations and personal adjustment. The boys ranged between


eight years, eleven months and nine years, eleven months, were average in intelligence, came from unilingual homes of middle socio-economic status and had been in school an equal number of years. Betts Visual Sensation and Perception Tests and Gates Perception Tests were used to measure visual functions and to determine if the retardation was a physical one. The Experimental Group significantly exceeded the Control Group in reversals, viewed with eyes separate and together and were consistently inferior in discrimination of differences between words.

Foster\(^1\) considered the 'look-say' method of learning preferable to Fernald's tracing method. The latter method is of use only in extreme cases of disability. Fernald's VAM (Visual-Auditory-Motor) method has been found to be of no significant improvement for average readers than the visual-auditory.

Brownell\(^2\) became interested in what actual practice, not optimum, was prevalent in teaching primary grade children phonetic analysis during the early 40's. He determined a checklist interrogating 546 teachers; 431 came from city systems, 115 from rural schools among thirteen states. It was expected that phonetic analysis extent would vary according to:

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1 M. Forster, "Visual and Visual-Kinesthetic Learning in Reading Nonsense Syllables", Journal of Educational Psychology, 32:452-8, September 1941.

1. Educational psychology—highest for 'conservative' teachers, lowest for 'progressive' teachers, intermediate for middle-of-the-road teachers. Such was not the case.

2. Length of teaching experience—categories were broken into 1-4 years, 5-8 years, 9-12 years, 13-16 years, 17-20 years, 21 years and over. The median phonetic scores were 77, 76, 76, 78, 76, 76 respectively. The expectation that teachers with longer experience would stress phonetic analysis to a greater extent was not borne out.

3. Recency of course work—it was assumed that this measure might indicate varying degree of familiarity with modern conceptions of reading instruction, but no relationship was found between recency of course work and the amount of emphasis on phonetic analysis.

4. Understanding of local supervisory policy—group medians revealed a reliable tendency for the amount of phonetic analysis to agree with supervisory policy. When the local policy was silent or indifferent the median of phonetic analysis instruction dropped to 69.

Bennett, in 1942, released his findings regarding the types of word analysis deficiencies among retarded readers. Many of these children, enrolled in various schools of the New York Metropolitan Area had been classified as non-readers though they averaged being in the third and fourth grades. A summarization was made of 34,274 errors, as reported by tutors, of 237 basic words in context. Considerations were as follows:

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1. What parts of words are most frequently observed by children and used as cues in word recognition?

2. Is the first half of a word more potent than the last half in perception?

3. Have pupils, extremely weak in word recognition, formed the habit of depending for cues upon trivial or non-characteristic details of words?

4. What letters and letter combinations prove most confusing?

5. Are words that are substituted for given words similar in form idea, or unlike?

6. Is a limited perception span a dominant characteristic of retarded readers?

7. Do errors due to reversal tendencies predominate overall other wrong responses?

8. Do median vowel errors predominate to such an extent that the hypothesis of 'islands of deafness' for the short vowel sounds seems a plausible explanation?

9. Do errors become more sensible as pupils progress in reading skill?

As pupils discovered skill in discrimination, reversal errors ceased to be dominant, final 's' became fixed, perception span for initial letters gradually widened so that single letters in the stimulus word ceased to be the sole cue. Bennett\(^1\) concluded, "Errors do not occur in a haphazard way, but are governed by context in which stimuli are incorporated, and by unfortunate learning habits which the pupil has developed in the process of reading. A pronounced characteristic

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\(^1\) Bennett, op. cit., p. 37
of pupils retarded in word recognition seems to be the tendency not to inhibit associative responses until a word is clearly seen in all its parts - beginning, middle and end."

Many studies have been carried on recently to decipher a trend in the effectiveness of the teaching of reading-look-say, contextual, strictly objective word analysis. In 1942 Lewis tested 87 children of two first and second grades. Three methods were utilized: (1) Word-picture identification, (2) Identification of words pronounced, (3) Tachistoscope. From the limited data obtained the difference between the two methods - word analysis and word meaning - were not statistically significant.

In 1943 Selke reported evidence that phonic instruction was lacking. Seventeen hundred pupils, from tiny rural to large city schools, were tested during the months of November and December on 203 words found commonly in more than 15 primers. All were woven into an original story form. Three-fifths of the total words appeared once, one-fourth twice, and the balance from three to seven times each. The omission of phonics was indicated when 90% knew 'its' but only 67% knew 'sits'.

1 Vera Lewis, "Rate of Learning in Grades One and Two as Measured from Word Analysis Vs. Word Meaning Presentation," Unpublished Thesis, Boston University, 1942.

In 1946 Nugent¹ employed tachistoscopic exposure of words and phrases accompanied by context to see if the combination would result in a marked increase in the number of words learned by first-graders. The study indicates: (1) Exercises using grades contextual clues are a valuable review technique, (2) Unwieldy tachistoscopes are unsatisfactory as a means of increasing speed.

Mulder and Curtin² stated by the late 20's, Encyclopedia Britannica reported that phonics as a systematic way of teaching reading had fallen into disfavor. In 1950 the same source reported that teaching word recognition by teaching the sound equivalents of printed letters and phonograms and the technique of blending so as to form words appeared justified "if only a limited amount of training in phonetics is given in the first grade, and continued in the second, third and later grades, and continued until all the important elements are learned."

Nugent³ felt that "it would seem that specific training in word analysis does improve reading achievement". Her study was conducted in a below-average school district in a large city. Both groups, 37


in all, were of the same social and economic background, and 10 weeks was consumed in the practice.

Moran\(^1\) conducted a similar study among third grade children, in a large industrial city in eastern Massachusetts, with a population three-fifths of Italian descent. She concluded, "The program affected the reading program very little."

Galvin\(^2\) evaluated the effect of a planned program in word analysis on reading achievement of second grade pupils. A phonics test was administered at the beginning and close of the study. The Gates Primary Reading Test was given at the conclusion to determine the effect of the 50 daily exercises on one group. "The difference in gains favored the Experimental Group. It was so slight, however, that it was of no significance."

Coe,\(^3\) in 1952, wrote six original stories to measure the number of errors made on the 236 new words introduced in **Friends and Neighbors**. The stories were read individually by 151 second-grade children. "At the end of the first testing of the first unit, non-recognition errors exceeded substitution errors (1329-1049). These findings indicate more

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dependence on word-analysis techniques than context at the year's beginning....At the end of the retest the reverse was true (844-778). This indicates that as the study progressed the children learned to depend less on word-analysis and more on context clues - a mature habit. Also typical of good readers, additional errors exceeded omission errors in both first testing and final retesting.

Many authorities support the conviction that visual discrimination is a necessary skill in reading achievement.

Artley\(^1\) is of the following opinion: "It is almost axiomatic to state that one of the basic goals in the teaching of reading is that of promoting growth in word recognition. While it is true that full comprehension and rich interpretation remain the ultimate goals of a sound reading program, these goals cannot be attained unless the reader is able to identify the printed symbols he meets and to attach meaning to them. One need not labor the point that one can comprehend no better than he is able to perceive with meaning the words which he meets. There are certain guiding principles that undergird any word recognition program."

In relation to word perception skills, Kottmeyer\(^2\) states: "There is little point to review various arguments about whether we shall teach children phonics. No human being can become completely literate in the English language unless he can use such a body of skills."


Dolch and Bloomster\(^1\) conducted a study to determine the age at which phonics readiness is reached. They pointed out that: "The idea has become commonly accepted that the child cannot begin to learn to read until he has reached a certain degree of mental maturity. That mental maturity has been called "reading readiness;" it is chiefly "school readiness" plus the ability to acquire a sight vocabulary that is to associate word sounds with word forms. When a child can make such associations under classroom conditions, he can begin learning to read.

One hypothesis is that the ability to learn and to use principles of phonics is closely connected with the increase in mental age. General reading readiness, which is largely readiness for the sight learning of words, is generally supposed to be attained at the mental age of about six years. Phonic readiness comes at some time later than sight readiness. Then it may come later than the mental age of six. To try out this hypothesis an experiment was conducted in the first two grades of a school in which the teaching of phonics had been uniform for at least two years and in which phonics had had some emphasis though not an unusual amount."

The conclusions were:

When consideration is given to the difficulty of accurate measurement of young children in both the fields concerned, the relation between mental maturity and the use of phonics is remarkably high.

Children of high mental age sometimes fail to acquire phonic ability but children of low mental age are certain to fail.

Children with mental ages below seven years made only chance scores, that is as far as this experiment indicates a mental age of seven years seems to be the lowest at which a child can be expected to use phonics even in the simple

situations provided by these two tests. This study does suggest, however, that the schools are perhaps expecting results from phonic teaching far too soon.

Woody\(^1\) takes the opposite viewpoint. He indicates: "There are many factors which may influence achievement in reading. Among these factors often listed are biological and physiological maturity; imperfections in the organs of sight, hearing or speech; and performance of the eyes as manifested in eye habits and visual functioning in the act of reading and background of experience. No doubt all of these factors and possibly others affect achievement in reading, although it has been the feeling of the writer for some time that in the ordinary classroom the most important factor conditioning achievement is the possession and functioning of an adequate background of meaningful experience. It has been his conviction that in the average classroom poor achievement in reading, other than that done by pupils who should be regarded as clinical cases, is conditioned by the pupil's lack of experience connected with the things about which he is reading or by his failure to connect whatever experience he may have had with the material which he is attempting to read. In either case the result is the same: meaningless word calling on the nonsense level."

In regard to the factors which affect reading achievement, Traxler\(^2\) reports: "It does not necessarily follow that training in phonics will result in greater reading achievement. In fact, the results of a few studies tend to cast doubt on the hypothesis that phonetic training increases reading ability."


Knowledge of Letter Names

In 1938 Wilson\(^1\) reported results of a four year study of kindergarten, first, second, and third grade pupils at the Horace Mann School in New York. The purpose of this study was to determine the relationship between reading readiness and reading progress. Both school and pre-school measures and appraisals were included in the investigation and gave consideration to scholastic, physical, psychological and social aspects of the children's development. One of the conclusions reached by the author is:

"Ability with the letter symbols is, to a large degree, a causal factor in ability to read words and sentences."

In a later report of the same study Wilson\(^2\) gives further evidence of the early attention given by children to the form and sounds of letters. He states:

"On sixteen exercises of the Gates Primary Reading Word Recognition Test, the five-year old kindergarten children tended to select the most like words about twice as frequently as either of the other wrong words. Initial likenesses seemed much more apparent to these kindergarten children than final likenesses.

While giving the test to the children, the examiner made note of the statements made by the children or observations of how they worked to

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select their answers. Nearly every one of the notes indicates that letter forms or sounds were the means of approach used by the children in recognizing the words."

Gates in 1939 made an evaluation of the following reading readiness tests: Picture Interpretation and Direction Test, Word-Matching Test, Word-Card Recognition Test, Blending Test, Ability to Read the Letters of the Alphabet Test and Sounding the Letters Test. These tests were administered to all pupils entering Grade I in a small Connecticut City. Examination of the correlations between each of these tests with reading achievement indicated that the rhyming, blending, letter-reading and letter-sounding tests gave lower predictions in some classes than in others. The following explanation of these differences is given by the author:

"These differences can scarcely be accounted for in any way other than on the assumption that they are due to differences in instruction. When word-form and word-sounding analyses are introduced and pupils are encouraged to identify and sound letters and groups of letters in working out the recognition and pronunciation, the reading attainments show fairly high correlations with tests of rhyming, blending, naming letters and giving word sounds. When such word-analysis activities are not used or are used to a less extent, the correlations with these tests are lower."

In 1942 Hester checked sixty-four remedial reading cases who scored below Grade III level on the Durrell Analysis of Reading

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Difficulty. She reports:

"That there is a definite lack of knowledge of letter sounds may be evidenced by a comparison of the total number of errors on letter names with the total on letter sounds. While 196 errors were made on lower-case names, 755 mistakes, or approximately four times as many, were made because the sounds either were given incorrectly or were totally unknown. This fact is indeed significant in the planning of a reading program."

Harrison\(^1\) is of the opinion that learning the names of the letters should be included in the visual training part of the readiness program. She says:

"In the readiness program, Visual Training will teach the pupils to recognize visual likenesses and differences in letters and words, and that the characters known as letters have names."

Harrison adds:

"It is advised that the names of the letters, both lower-case and capital, be learned. A child who knows the names of the letters will make closer visual discrimination between letters, which are the smallest visual units in reading."

That the teaching of letter names should begin at a later time is suggested by Hildreth\(^3\) in 1949 when she states:

"The children need to begin learning the names of the different letters at about the

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\(^2\) Ibid., p. 128

time they begin word-analysis and discussion of word structure so that they can talk with the teacher about the letters that make up a particular word."

Ilg and Ames\(^1\) described the development of reading ability as a slow process which has its beginning as far back in a child's life as the age of fifteen months. Of the development of knowledge of letter names the authors point to these stages:

"From 36 to 42 months of age children may identify some capital letters in an alphabet book or on blocks. Some select letters by form, choosing the round letters (O, D, C, G) or the vertical ones (T, H, L); some select by association, such as M for Mommy, D for Daddy, etc. Some may even know the alphabet through songs or poems.

At 48 months many children will recognize salient capital letters, and may spontaneously demand to print certain capital letters. They may identify a letter without naming it, saying, 'That's my name'.

At 5 years most children know all or at least many capital letters. They like to spell such words as c-a-t, and their own names. They will often ask, 'What does c-a-t spell?' They have learned to underline certain letters on request.

At 5-1/2 most children know the entire alphabet and can recognize letters or even some single words on a page in a familiar book.

Most six year olds will show continued interest in small as well as capital letters, and will get clues from the length of a word, its beginning sound or letter. With this normal development the six year old child will be

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ready for the first steps in learning to read."

Ilg and Ames\(^1\) conclude: "With those children who merely start the sequence in regard to letters and words at five or even six years, it is obvious that actual reading will be long delayed."

An investigation of the reading abilities of 40 good and 41 poor readers in second-grade classes was made in 1951 by Sheldon and Hatch.\(^2\) Weaknesses which seemed to be most evident in poor readers were:

1. Names of letters and sounds of letters and blend unknown.
2. Reversals of letters, b-c, p-q, etc.

In 1952 Haskell\(^3\) and others undertook a study to determine the relationship between knowledge of letter names and success in reading among first-grade children. Correlations were found between reading achievements and the following factors: visual discrimination, knowledge of letter names, association of upper and lower case letters, and intelligence. They report:

"The correlations ranged from .31 to .54 and were all positive. The highest correlation was between association of upper and lower case letters and reading achievement."

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\(^3\) Barbara A. Haskell and others, "The Relationship of the Knowledge of Letter Names and Reading Achievement in Grade I, Unpublished Master's Thesis, Boston University, 1952."
Cazanove\textsuperscript{1} and others developed and analyzed measures to test the knowledge of letter names in Grades I, II, and III. A reliability study was conducted to establish the relationship between the knowledge measured by their group tests and an individual oral inventory test. They conclude:

"1. All of the tests showed a wide range in Grade I and fairly high reliability. Apparently the tests measured the various learning rates in the grade.

2. It would appear that children in Grades II and III do have a good knowledge of letter names and still may have difficulty in reading."

Hudak and Wentzel\textsuperscript{2} constructed exercises for use in Grade I to teach: the recognition of all the letters in the alphabet, capital and lower case letters; the association of capital and lower case letters; and the names of all the letters in the alphabet. Correlations were also computed to determine the relationship of the use of these exercises to reading achievement in Grade I. The authors report the following:

"Knowledge of letters before formal reading aids children in attaining success in beginning reading."

\textsuperscript{1} Frances L. Cazanove and others, "The Construction and Analysis of Tests to Measure the Knowledge of Letter Names in Grades One, Two, and Three," Unpublished Master's Thesis, Boston University, 1953.

Boynton and others in a study to determine the various skills possessed by children at the time they first enter school attempted to measure among other things: knowledge of letter names, knowledge of the sounds of letters and the relationship of this knowledge to success in beginning reading.

Seven hundred eighty-one children in Grade I in ten different communities were included in this study. The chronological ages ranged from five years, four months to seven years, eleven months. The Intelligence Quotients ranged from 59 to 142 with a median of 107.36 and a mean of 107.03. The standard deviation was 9.87.

As to knowledge of letter names, the following conclusions were reached:

1. Identification of letters from flashcards and dictation showed little difference.

2. Identifying the final consonant of a word was somewhat easier than identifying the final consonant.

3. Identification of small letters was more difficult than identification of capital letters.

4. Children do not bring to school the ability to identify many of the upper case letters and even fewer of the lower case letters.

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1 Catherine Boynton and others, "Differences in Reading Background Brought to First Grade," Unpublished Master's Thesis, Boston University, 1955.
Interests, Attitudes and Preferences

According to LaPlant,¹ "Interest readiness appears at different ages and different periods for each child. Interest changes and differs for each individual child." In a study by Gates² of children's interests, it was found that surprise is the most potent quality, then liveliness, animalness, humor, and plot in descending order. Since no correlations are large, the indication is that no one quality, in and of itself, is responsible for the interest which the children showed in the thirty selections. Results indicate that when it is desired to make a composition appeal to children's interests, it is necessary to incorporate, as far as possible, the more powerful of these interest-producing elements.

In May 1940, an investigation of eight hundred and eleven pupils in grades three through seven in elementary and high schools in Oakland, California was conducted by Forry and Hockett³ whereby the children filled out interest inventory blanks showing rate of preference. Strong interest in action and exciting adventure, surprise, and humor were revealed. The younger pupils expressed strong interest in a greater

variety of topics, whereby the older children were more discriminating in topics.

A recent study was done by Woodward\(^1\) concerning measurement of pupil interest in types of stories at grade two level. Their preference was determined for three narrative stories and three informational stories. Preferences of boys and girls as well as those of upper and lower quartiles in intelligence were determined. Results showed that fairy stories, folk lore, child experience, and worker-helper stories were preferred by more than ninety-three per cent.

In 1952 Healy et al\(^2\) investigated likes and dislikes of children in grades two and three for certain stories in the basal reader, "Over a City Bridge". She stated that, "Most children liked the stories and in order of the following reasons: plot, humor, personal association, length, rhyme, and ending."

Boutin et al\(^3\) surveyed the likes and dislikes of children in grade two for stories in "We Are Neighbors". Again it was shown that most children liked the stories and for the following reasons: plot, humor, personal association, rhyme, and characters in that order.

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A second aspect to study in children's interests in reading is the effect of intelligence upon preference, interest, and attitude. In a survey of reading interest studies conducted by Friedman and Nemzek\(^1\) in 1936, it was stated that "Children of superior intelligence read more than children of lower intelligence." Coy\(^2\) found that "Gifted children read more widely and more superior types of literature." However, Huber\(^3\) concluded that studies of gifted children do not show their taste in reading to be greatly different from those of children of less intelligence. Gates\(^4\) also believes that intelligence is of slight importance.

Lazar\(^5\) studied the reading interests, activities, and opportunities of bright, average, and dull children, ten to twelve years in age, in thirteen public schools in New York City. The findings showed that the bright group had in general better environmental opportunities than


\(^5\)M. Lazar, "Reading Interests, Activities, and Opportunities of Bright, Average, and Dull Children," Teachers College Record, 39:153-4, November, 1937.
either average or dull group; that there was a marked relationship between home background rating and intelligence; and that there were marked differences in the reading interests, activities, and opportunities of children of different levels of intelligence. The correlations between the various items and intelligence were low which may be an indication that the schools have succeeded to a certain extent in interesting all types of pupils in reading.

Different approaches to the measurement of children's interests, attitudes, and preferences have been attempted. Wilson\(^1\) sent out one hundred and seventy-five questionnaires in 1938-1939 to kindergarten, first and second grade children of the Hunter Model School. Intelligence quotients and socio-economic status was above average. The questions included those about phonics, desire to write and read alone, types of stories and magazines enjoyed, dramatic play involving stories read and other factors that influence outside reading. The summary stated the following conclusions: the children evinced an interest in reading long before entrance into school; they were interested both in materials of reading and in learning to read; in mastering the mechanics of reading these children were definitely interested in letters and numbers; home provisions probably favored early reading interests; reading preferences were varied and showed only small grade-level differences; and finally reading difficulties were reported as rare.

\(^{1}\) Frank T. Wilson, "Reading Interests of Young Children," *Journal of Genetic Psychology*, 58:363-389, June, 1941.
Corey\textsuperscript{1} has attempted to measure attitudes in the classroom by collecting attitudinal statements from both teachers and pupils. A high score means a favorable attitude toward the practice or institution involved. He also points out that the advantages of an attitude scale lie in that it can show changes in attitude and throw light on the relation to attitude of sex, intelligence, socio-economic status, and education.

Mitchell\textsuperscript{2} reported on the construction and evaluation of a measure of reading preference. The children were in the fifth and sixth grades and were measured in the light of the extent and variety of reading interests. Test Four was a general and reading interest inventory and attempted to measure experiences which have enriched the reading of the pupils and broadened their reading interests. There were lists of items and the pupils were asked to name the order of their preferences. She concluded that of the two hundred and ten children tested, one hundred and thirty-eight children had library cards, one hundred and sixty-six said they would like more available reading material, and that the children read one thousand and forty-five books per month.

Cusack\textsuperscript{3}, in 1948, completed an analysis of the influence of achievement on preference for reading and arithmetic. She tried to


\textsuperscript{2}Sarah Mitchell, Construction and Evaluation of a Measure of Reading Preference, Boston University, Unpublished Master of Education Thesis, 1944.

discover if fifth grade pupils who preferred reading and arithmetic achieved better in those subjects than did the total fifth-grade population of their school system. She concluded that no other significant differences were found but all the differences favored the groups who chose reading among their three favorite subjects.

Day¹ has reported findings that seem to have been stated in many studies, "Interest should begin in the home before the child ever reaches school. Also, as books are more accessible to teachers and pupils, teachers should find it easier to help children develop a real interest in reading."

**Retention Studies**

What effect does the summer vacation have upon reading skills acquired by children? Research studies are not conclusive as to the amount of forgetting that takes place.

Brueckner and Distad² determined the effect of the summer vacation on the reading ability of first-grade children in Minneapolis. Twelve classes of approximately 38 from four different schools were used. The Minneapolis Primary Reading Test and the Haggerty Reading Examination,


Sigma I, measured reading ability before and after vacation. The tests were administered during the last week of the spring quarter and the first week of the fall term. No attempt was made to determine what the reading activities of the pupils had been during the summer vacation. They found that there is little difference in the reading ability of children from the first grade following summer vacation. In general, the pupils with the low intelligence scores forgot the most.

In 1940, Keister\(^1\) investigated the permanence of reading skills acquired by children with mental ages below six years. Three first-grade classes in St. Paul, Nebraska were given standardized tests. Measures of each child's reading ability at the end of Grade I and beginning of Grade II were available.

The conclusions showed that:

1. It is possible for children who enter Grade I before they reach the age of six to make normal progress in reading during the first year.

2. The skills attained by such underage children lack permanence and tend to disappear during the summer months between Grades I and II.

3. The loss between Grades I and II is not made up in succeeding years and that these children tend to be permanently retarded to about the same degree as they are at the beginning of Grade II.

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\(^1\) B. V. Keister, "Reading Skills Acquired by Five Year Old Children," *Elementary School Journal*, 41:587-96, April, 1941.
Cook attempted to ascertain the reading activities of the children during the summer. Research conducted in the primary grades of the Laboratory School, at Mankato State Teachers' College over a period of four years, showed a loss of 0.31 of a school year, or approximately three months in reading ability when measured by the Gates Primary Reading Tests. The Primary Reading Tests of the Metropolitan Achievement Battery were given in May and repeated in September. The resulting scores indicated an average loss of 0.43 a year, or more than four months.

A further study to increase summer retention by planning a summer program of daily assignments in reading, writing and arithmetic was carried out. In September all the children were retested and questioned about the amount of practice on their assignments.

The conclusions from this study showed that, in general, the pupils who practiced all summer retained their reading skills or made some gain. On the whole, the less the amount of practice, the greater the loss of ability.

A more recent study was made by Howe in 1949. Two hundred forty-six children from nine classrooms were involved. The Gates Primary Reading Battery I for the first grade and first half of second grade was selected for the study. Form A of the Gates Primary Reading, Battery I

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2Eleanor Frances Howe, "A Study to Determine the Amount of Retention of First Grade Reading Achievement Following Summer Vacation," Unpublished Thesis, Boston University, School of Education, 1949.
was given the last week in May, 1947. Form B of the Gates Primary Reading, Battery I was given the beginning three days of school in September, 1947. The I.Qs. were obtained from the school cumulative records. The Detroit Beginning First Grade Intelligence Test had been administered in June, 1946 at the close of the kindergarten year. Her conclusions revealed that there is little difference in reading achievement in May and September as shown by test results, but the September tests showed a wider range.

Bruene\(^1\) studied the effect of summer vacation in the intermediate grades and noted improvement in reading ability. The study was made at the University of California in fourth, fifth and sixth grades. Stanford Achievement Tests (Form A) were given in May, 1927. In September, 1927, Stanford Achievement Tests (Form B) were given. All grades made a slight gain in reading ability. The percentage of those with an I.Q. of 110 and above who gained or remained the same in reading was 73, and those with an I.Q. below 110 who gained or remained the same was 50. Since the summer time activities in which these children engaged which might give reading exercise was not ascertained, Bruene felt her study was incomplete.

Improvement following summer vacation was also noted by Morgan\(^2\) in


\(^2\)L. D. Morgan, "How Effective is Specific Training in Preventing Loss Due to Summer Vacation?" *Journal of Educational Psychology*, 20:466-71, 1929.
examining the effectiveness of specific training in preventing loss due to summer vacation and the significance of specific training. Two sixth grade classes from a city in southeastern Kansas were used. The Compass Survey Test in Arithmetic, Form A, Thorndike McCall's Reading Scale, Form 8, and Otis Reasoning Test in Arithmetic, Form A, were given May 11, 1925. To one group special training was given in the fundamentals of arithmetic, silent reading and problem solving for two weeks. On September 4, 1925, the same tests were given again. Conclusions from this study showed that:

1. Two weeks of specific training is productive of greater efficiency in the three subjects considered.

2. The greatest gain was made in reading.

No significant change in reading ability was noted by Patterson in studying the effect of the summer vacation on children's mental ability and retention of arithmetic and reading. One hundred forty-nine children in grades four to eight in a city school in New York state were tested. The children were classified into a super-normal group, a normal group, and a sub-normal group. The Binet-Simon Classification was used to classify each grade into groups. Tests were given in the middle of June and again to the same pupils in the middle of September in areas of mental ability, reading and arithmetic. The results showed that summer vacation seemed to have a beneficial effect on the intelligence of all children, but showed little effect on the reading ability.

Mildred V. W. Patterson, "The Effect of the Summer Vacation on Children's Mental Ability and on Their Retention of Arithmetic and Reading," *Education*, 46:222-228, 1925.
A loss in reading ability is noted by Elder\(^1\) in his study to determine the effect of summer vacation on the silent reading ability of pupils in the intermediate grades in Monticello, Indiana. The study was based on B scores made on Monroe's Standardized Silent Reading Test. Form 2 was given to pupils in grades III and IV on May 4, 1926. Form 1 was given to the same pupils on September 15, 1926. Two hundred three pupils were tested. Elder\(^2\) concludes,

"Ability in silent reading changes whether children are attending school or not. Although many pupils read enough voluntarily to cause a growth in reading ability, a large percentage do not read a sufficient amount to prevent a decline in reading during the summer. Because of increases in ability on the part of some of the better readers and decreases on the part of the poorer readers, a group of pupils is less likely to be homogeneous with respect to silent reading abilities at the opening of school in September than at the close of school in spring."

The research indicates various achievement in primary grades. This study is an attempt to analyze reading achievement of two groups of second grade children.

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\(^2\) Ibid.
CHAPTER III

Plan of Study

The first step was to establish the types of tests that would be needed to investigate the problem. Results of mental ability were available for many of the children. The Otis Quick-Scoring, Mental Ability-Alpha Short Form\(^1\) was administered to all others.

Reading achievement was measured by two tests - a Paragraph Meaning and a Word Meaning test from the Stanford Achievement Test\(^2\) Primary Battery - Form J.

In order to determine the extent to which knowledge of letter names plus emphasis on auditory discrimination enable the experimental group to hear sounds in words satisfactorily, some comparisons between the control and the experimental groups to show ability to hear sounds in words was deemed necessary. For this purpose the Boston University Test\(^3\) - Hearing Sounds in Words - was used.

Part A called for the identification of the beginning letter heard in seventeen dictated words.

Part B called for the identification of the last or final sound heard in sixteen unfamiliar dictated words.


\(^3\)Boston University, Boston, Massachusetts, 1957.
Part C consisted of twelve items - each of which was made up of an unfamiliar word broken into its sounds and including sounds not in the word, e.g.

blinding ind r bl x ting

**Attitude Inventory**

In order to measure the children's relative attitude toward reading, a scale was devised. It was necessary to develop a form that would be easy for the children to follow. The following was the first attempt at developing this scale:

Do you like: Always Sometimes Never

1. ice cream for dessert
2. to go swimming on hot days
3. to wash the dishes
4. to play house
5. to get up mornings
6. to go to bed at night
7. to sing
8. to go for a ride
9. to go skating
10. to play in the snow
11. to watch television
12. to play "Cowboys and Indians"
13. to collect things
14. to color
15. dogs

This was tried in the seven classrooms of the people doing the study using mimeographed sheets. The teacher read the items. Each child checked his choice. It seemed to indicate that this form could be handled easily by the children.

A second scale which included one reading item against two general
The child marked his first, second, and third choice. This test included the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>Choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If someone gave you money --</td>
<td>put it in the bank</td>
</tr>
<tr>
<td></td>
<td>buy something to eat</td>
</tr>
<tr>
<td></td>
<td>buy a book</td>
</tr>
<tr>
<td>2. If you went on a long ride, which would you like to do --</td>
<td>look at a magazine</td>
</tr>
<tr>
<td></td>
<td>play a car game</td>
</tr>
<tr>
<td></td>
<td>listen to the radio</td>
</tr>
<tr>
<td>3. Which would you like to do after school --</td>
<td>go to the library</td>
</tr>
<tr>
<td></td>
<td>play outdoors</td>
</tr>
<tr>
<td></td>
<td>watch TV</td>
</tr>
<tr>
<td>4. At indoor recess which do you like best --</td>
<td>write on the blackboard</td>
</tr>
<tr>
<td></td>
<td>read a story to the children</td>
</tr>
<tr>
<td></td>
<td>listen to records</td>
</tr>
<tr>
<td>5. If you finish your work, would you --</td>
<td>go to the library corner</td>
</tr>
<tr>
<td></td>
<td>draw pictures</td>
</tr>
<tr>
<td></td>
<td>practice writing</td>
</tr>
<tr>
<td>6. Which would you like to do for a Washington's Day Program --</td>
<td>sing a song</td>
</tr>
<tr>
<td></td>
<td>dramatize a story</td>
</tr>
<tr>
<td></td>
<td>make a movie</td>
</tr>
<tr>
<td>7. While waiting for mother to take you shopping, would you --</td>
<td>go out and play</td>
</tr>
<tr>
<td></td>
<td>color a picture</td>
</tr>
<tr>
<td></td>
<td>look at a book</td>
</tr>
<tr>
<td>8. If you wanted to learn more about firemen, would you --</td>
<td>find stories about them</td>
</tr>
<tr>
<td></td>
<td>see a movie or filmstrip</td>
</tr>
<tr>
<td></td>
<td>invite a fireman to visit</td>
</tr>
<tr>
<td>9. On a day at home, would you --</td>
<td>watch TV</td>
</tr>
<tr>
<td></td>
<td>play school</td>
</tr>
<tr>
<td></td>
<td>paste in a scrapbook</td>
</tr>
<tr>
<td>10. Which would you like for a birthday present --</td>
<td>a box of crayons</td>
</tr>
<tr>
<td></td>
<td>a book you can read</td>
</tr>
<tr>
<td></td>
<td>a Mickey Mouse watch</td>
</tr>
<tr>
<td>11. A group of children are deciding what to play, would you play --</td>
<td>cowboys and Indians</td>
</tr>
<tr>
<td></td>
<td>hospital</td>
</tr>
<tr>
<td></td>
<td>school</td>
</tr>
</tbody>
</table>
12. Would you rather work in --
   a reading workbook
   an arithmetic workbook
   a spelling workbook

13. What would you do for a visitor to the class --
   sing a song
   read a story
   do a dance

14. If you had a contest in the class with teams chosen, would you choose --
   a spelling bee
   number stories
   a reading quiz

15. Do you like to --
   do numbers
   read
   spell

After several tryouts with this test, it was found that the format was deficient in these respects: first, there was too much for the child to remember and often he did not finish each question; second, the choices often were not equal to each other, as in number ten, every child chose the Mickey Mouse watch. This test was also used in a third-grade class and most of the time reading was not chosen first. A numerical value of three when reading was selected as a first choice, two when second, and one when third was used. The third test was composed of all reading items with the choice of always, sometimes, and never. In the final form, the choices were: not at all, a little, and very much. The test follows:

not at all    a little    very much

1. Do you like to have your teacher read a story to you

2. Do you like to take books from the library

3. Do you like to read a story to the class
4. Do you like to have a child read a story to the class

5. Do you like to get a book for a present

6. Do you like to have someone read a story to you at bedtime

7. Do you like to read by yourself when you stay indoors

8. Do you like to read in the summer

9. Do you like to read to someone at home

10. Do you like to learn new words each day

11. Do you like to try to read the funnies by yourself

12. Do you like to play reading games

13. Do you like to read signs

14. Do you like to do a reading paper

15. Do you like to go to the library corner when your work is finished

The final test was scored in the following manner: five points for a choice of very much, three points for a choice of a little, and one point for a choice of not at all.

Test III Applied Phonics

This test, originally made up of forty items, was increased to sixty items by the seminar group. It was given to determine the
children's ability to apply their knowledge of phonics. In this test, the teacher told the children the first word for each item and directed them to write the number "1" under the first word. She then dictated four of the five remaining words in each item, telling the children what number to record under each word, e.g.:

"The first word is glad. Write Number 1 under it."

"Listen for Number 2 -- pad. Write Number 2 under it."

"Listen for Number 3 -- sad. Write Number 3 under it."

"Listen for Number 4 -- mad. Write Number 4 under it."

"Listen for Number 5 -- fad. Write Number 5 under it."

A copy of the test with directions may be found in the appendix.

Population

The tests were administered to 1051 children making up the experimental and control groups in the public schools of 7 towns and cities in Massachusetts. The towns and cities varied in size, from small to large. Children included in this study came from a variety of backgrounds. The socio-economic status of the population varied from below average to above average, which gave a desirable range.

The classroom teachers administered the tests and the people doing the research scored them.
CHAPTER IV

Analysis of Data

The data were analyzed to compare the two populations on:

1. Sounds in speech
2. Attitudes
3. Applied phonics
4. Word Meaning
5. Paragraph Meaning

The same functions were compared according to intelligence levels.

Table I shows the mean chronological ages and intelligence quotients for both groups.

Table I

Comparison of Mean Chronological Ages and Intelligence Quotients

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean C.A.</th>
<th>S.D.</th>
<th>Mean I.Q.</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>449</td>
<td>92.04</td>
<td>4.46</td>
<td>112</td>
<td>14.80</td>
</tr>
<tr>
<td>Control</td>
<td>602</td>
<td>91.95</td>
<td>5.33</td>
<td>104</td>
<td>12.75</td>
</tr>
</tbody>
</table>

The chronological ages for the control group ranged from 81 months to 123 months with a mean of 91.95 months. The experimental group ranged from 80 months to 115 months with a mean of 92.04 months. The experimental group was superior mentally with a mean I.Q. of 112 compared with 104 for the control group.
Table II shows the comparison of mean scores for both groups on sounds in speech.

Table II
Comparison of Mean Scores Sounds in Speech

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>$\text{SE}_M$</th>
<th>Diff.</th>
<th>$\text{SE}_D$</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>449</td>
<td>57.1</td>
<td>7.1</td>
<td>.33</td>
<td>3.90</td>
<td>.44</td>
<td>8.86</td>
</tr>
<tr>
<td>Control</td>
<td>602</td>
<td>53.2</td>
<td>7.3</td>
<td>.29</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean score for the experimental group was 57.1 compared with 53.2 for the control group. The critical ratio of 8.86 showed this difference to be statistically significant in favor of the experimental group.

Table III shows the comparison of the mean scores for the two groups on the attitudes scale.

Table III
Comparison of Mean Scores on Attitudes

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>$\text{SE}_M$</th>
<th>Diff.</th>
<th>$\text{SE}_D$</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>449</td>
<td>58.47</td>
<td>10.27</td>
<td>.485</td>
<td>.63</td>
<td>.59</td>
<td>1.07</td>
</tr>
<tr>
<td>Control</td>
<td>602</td>
<td>59.1</td>
<td>9.66</td>
<td>.35</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean score for the experimental group was 58.47 compared with 59.1 for the control group. The critical ratio of 1.07 showed this difference was not statistically significant. There are 70 chances in 100 that this is a true difference in favor of the control group.
Table IV shows the comparison of mean scores for both groups in applied phonics.

Table IV
Comparison of Mean Scores on Applied Phonics

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>SEM</th>
<th>Diff.</th>
<th>SE_D</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>449</td>
<td>57.16</td>
<td>7.83</td>
<td>.369</td>
<td>3.86</td>
<td>.509</td>
<td>7.58</td>
</tr>
<tr>
<td>Control</td>
<td>602</td>
<td>53.3</td>
<td>8.82</td>
<td>.359</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean score for the experimental group was 57.16 compared with 53.3 for the control group. The critical ratio of 7.58 showed this difference to be statistically significant in favor of the experimental group.

Table V shows the comparison of mean scores on word meaning for both groups.

Table V
Comparison of Mean Scores on Word Meaning

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>SEM</th>
<th>Diff.</th>
<th>SE_D</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>449</td>
<td>22.9</td>
<td>8.28</td>
<td>.39</td>
<td>2.8</td>
<td>.50</td>
<td>5.60</td>
</tr>
<tr>
<td>Control</td>
<td>602</td>
<td>20.1</td>
<td>7.80</td>
<td>.32</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean score for the experimental group was 22.9 words compared with 20.1 words for the control group. The critical ratio of 5.60 showed this difference to be statistically significant in favor of the experimental group.
Table VI shows the comparison of mean scores on paragraph meaning for both groups.

Table VI
Comparison of Mean Scores on Paragraph Meaning

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>( SE_M )</th>
<th>Diff.</th>
<th>( SE_D )</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>449</td>
<td>26.6</td>
<td>10.9</td>
<td>.51</td>
<td>3.0</td>
<td>.43</td>
<td>6.79</td>
</tr>
<tr>
<td>Control</td>
<td>602</td>
<td>23.6</td>
<td>10.3</td>
<td>.41</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean score for the experimental group was 26.6 compared with 23.6 for the control group. The critical ratio of 6.79 shows this difference to be statistically significant in favor of the experimental group.

Table VII shows the mean chronological ages and intelligence quotients for both populations when divided according to intelligence levels.

Table VII
Mean Chronological Ages and I.Q.s for Both Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean I.Q.</th>
<th>S.D.</th>
<th>Mean C.A.</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 + above</td>
<td>Experimental</td>
<td>243</td>
<td>122.42</td>
<td>10.49</td>
<td>90.59</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>202</td>
<td>118</td>
<td>6.7</td>
<td>90.3</td>
</tr>
<tr>
<td>90 - 110</td>
<td>Experimental</td>
<td>182</td>
<td>101.1</td>
<td>5.13</td>
<td>92.2</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>330</td>
<td>99.8</td>
<td>5.7</td>
<td>92.1</td>
</tr>
<tr>
<td>below 90</td>
<td>Experimental</td>
<td>24</td>
<td>83.4</td>
<td>4.08</td>
<td>93.75</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>70</td>
<td>83.7</td>
<td>6.53</td>
<td>98.6</td>
</tr>
</tbody>
</table>
The mean chronological ages were quite comparable in all groups except the control group of children below 90 I.Q. The mean I.Q. for the high experimental group was 122 compared with 118, for the middle experimental group 101.1 compared with 99.8, and for the low experimental group 83.4 compared with 83.7.

Table VIII shows the comparison of mean scores on sounds in speech for children with I.Q.s above 110 for both groups.

Table VIII

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>S.E.M</th>
<th>Diff.</th>
<th>S.E_D</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>243</td>
<td>56.77</td>
<td>5.08</td>
<td>.32</td>
<td>2.67</td>
<td>.51</td>
<td>5.23</td>
</tr>
<tr>
<td>Control</td>
<td>202</td>
<td>54.1</td>
<td>5.7</td>
<td>.40</td>
<td>.63</td>
<td>.90</td>
<td>.70</td>
</tr>
</tbody>
</table>

The mean score for the experimental group was 56.77 compared with 54.1 for the control group. The critical ratio of 5.23 shows this difference is statistically significant in favor of the experimental group.

Table IX shows the comparison of mean scores on the attitude test for children with I.Q.s above 110.

Table IX

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>S.E.M</th>
<th>Diff.</th>
<th>S.E_D</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>243</td>
<td>57.67</td>
<td>10.13</td>
<td>.64</td>
<td>.63</td>
<td>.90</td>
<td>.70</td>
</tr>
<tr>
<td>Control</td>
<td>202</td>
<td>58.30</td>
<td>9.18</td>
<td>.64</td>
<td>.63</td>
<td>.90</td>
<td>.70</td>
</tr>
</tbody>
</table>
The mean score for the experimental group was 57.67 compared with 58.30 for the control group. The critical ratio of .70 shows the difference is not statistically significant.

Table X shows the comparison of mean scores for the children in both groups with I.Q.s above 110 on applied phonics.

Table X
Comparison of Mean Scores on Applied Phonics

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>$SE_M$</th>
<th>Diff.</th>
<th>$SE_D$</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>243</td>
<td>55.19</td>
<td>4.82</td>
<td>.30</td>
<td>1.01</td>
<td>1.28</td>
<td>.78</td>
</tr>
<tr>
<td>Control</td>
<td>202</td>
<td>56.2</td>
<td>4.10</td>
<td>.28</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean score for the experimental group was 55.19 compared with 56.2 for the control group. The critical ratio of .78 shows this difference was not statistically significant.

Table XI shows the comparison of mean scores on paragraph meaning for the children in both groups with I.Q.s above 110.

Table XI
Comparison of Mean Scores on Paragraph Meaning

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>$SE_M$</th>
<th>Diff.</th>
<th>$SE_D$</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>243</td>
<td>24.94</td>
<td>8.04</td>
<td>.51</td>
<td>1.20</td>
<td>.77</td>
<td>1.55</td>
</tr>
<tr>
<td>Control</td>
<td>202</td>
<td>23.74</td>
<td>8.34</td>
<td>.58</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The mean score for the experimental group was 24.94 compared with 23.74 for the control group. The critical ratio of 1.53 shows this difference was not statistically significant. There are 86 chances in 100 that it is a true difference in favor of the experimental group.

Table XII shows the comparison of mean scores on paragraph meaning for the children in both groups with I.Q.s above 110.

Table XII
Comparison of Mean Scores on Paragraph Meaning

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>$SE_M$</th>
<th>Diff.</th>
<th>$SE_D$</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>243</td>
<td>29.37</td>
<td>10.5</td>
<td>.67</td>
<td>1.47</td>
<td>.99</td>
<td>1.48</td>
</tr>
<tr>
<td>Control</td>
<td>202</td>
<td>27.9</td>
<td>10.4</td>
<td>.73</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean score for the experimental group is 29.37 compared with 27.9 for the control group. The critical ratio of 1.48 shows this difference is not statistically significant. There are 86 chances in 100 that it is a true difference in favor of the experimental group.

Table XIII shows the comparison of mean scores in sounds in speech for children with I.Q. scores between 90 and 110 in both groups.

Table XIII
Comparison of Mean Scores in Sounds in Speech

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>$SE_M$</th>
<th>Diff.</th>
<th>$SE_D$</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>182</td>
<td>55.67</td>
<td>7.5</td>
<td>.56</td>
<td>2.37</td>
<td>.69</td>
<td>3.43</td>
</tr>
<tr>
<td>Control</td>
<td>330</td>
<td>53.3</td>
<td>7.3</td>
<td>.40</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The mean score for the experimental group was 55.67 compared with 53.3 for the control group. The critical ratio of 3.43 shows this difference to be statistically significant in favor of the experimental group.

Table XIV shows the comparison of mean scores in attitudes for children with I.Q. scores between 90 and 110 in both groups.

Table XIV

Comparison of Mean Scores in Attitudes

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>( \text{SEM} )</th>
<th>Diff.</th>
<th>( \text{SED} )</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>182</td>
<td>58.28</td>
<td>9.65</td>
<td>.715</td>
<td>1.32</td>
<td>.88</td>
<td>1.50</td>
</tr>
<tr>
<td>Control</td>
<td>330</td>
<td>59.60</td>
<td>9.76</td>
<td>.537</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean score for the experimental group was 58.28 compared with 59.6 for the control group. The critical ratio of 1.5 shows that this difference is not statistically significant. There are 86 chances in 100 that it is a true difference in favor of control group.

Table XV shows the comparison of mean scores in applied phonics for children with I.Q. scores between 90 and 110 in both groups.

Table XV

Comparison of Mean Scores in Applied Phonics

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>( \text{SEM} )</th>
<th>Diff.</th>
<th>( \text{SED} )</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>182</td>
<td>53.22</td>
<td>9.02</td>
<td>.67</td>
<td>.58</td>
<td>.85</td>
<td>.68</td>
</tr>
<tr>
<td>Control</td>
<td>330</td>
<td>53.8</td>
<td>9.4</td>
<td>.52</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The mean score for the experimental group was 53.22 compared with 53.8 for the control group. The critical ratio of .68 shows that this difference is not statistically significant.

Table XVI shows the comparison of mean scores in word meaning for children in both groups with I.Q.s of 90 - 110.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE_M</th>
<th>Diff.</th>
<th>SE_D</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>182</td>
<td>21.29</td>
<td>7.6</td>
<td>.563</td>
<td>2.39</td>
<td>.685</td>
<td>3.48</td>
</tr>
<tr>
<td>Control</td>
<td>330</td>
<td>18.9</td>
<td>7.26</td>
<td>.399</td>
<td>.685</td>
<td>.399</td>
<td>3.48</td>
</tr>
</tbody>
</table>

The mean score on word meanings for the experimental group is 21.29. The mean score for the control group is 18.9. The critical ratio of 3.48 is statistically significant in favor of the experimental group.

Table XVII shows the comparison of mean scores in paragraph meaning for children in both groups with I.Q. of 90 - 110.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE_M</th>
<th>Diff.</th>
<th>SE_D</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>182</td>
<td>23.69</td>
<td>10.28</td>
<td>.761</td>
<td>.78</td>
<td>.92</td>
<td>.85</td>
</tr>
<tr>
<td>Control</td>
<td>330</td>
<td>22.</td>
<td>9.5</td>
<td>.523</td>
<td>.523</td>
<td>.523</td>
<td>.523</td>
</tr>
</tbody>
</table>
The mean score is 23.69 for the experimental group and 22 for the control group. The critical ratio is .85, which is not statistically significant.

Table XVIII shows the comparison of mean scores on sounds in speech for children in both groups with I.Q. scores below 90.

Table XVIII
Comparison of Mean Scores on Sounds in Speech

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE_M</th>
<th>Diff.</th>
<th>SE_D</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>24</td>
<td>53.62</td>
<td>7.5</td>
<td>1.53</td>
<td>6.52</td>
<td>1.79</td>
<td>3.64</td>
</tr>
<tr>
<td>Control</td>
<td>70</td>
<td>47.1</td>
<td>7.65</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean score for the experimental group was 53.62 compared with 47.1 for the control group. The critical ratio of 3.64 shows this difference to be statistically significant in favor of the experimental group.

Table XIX shows the comparison of mean scores for an attitudes test for children in both groups with I.Q.s below 90.

Table XIX
Comparison of Mean Scores for Attitudes

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE_M</th>
<th>Diff.</th>
<th>SE_D</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>24</td>
<td>59.63</td>
<td>9.4</td>
<td>1.92</td>
<td>1.27</td>
<td>2.28</td>
<td>.56</td>
</tr>
<tr>
<td>Control</td>
<td>70</td>
<td>60.9</td>
<td>10.4</td>
<td>1.24</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The difference of 1.27 between the means yields a critical ratio of .56, which is not statistically significant.

Table XX shows the comparison of mean scores on applied phonics for the children in both groups with I.Q.s below 90.

Table XX
Comparison of Mean Scores on Applied Phonics

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>$SE_M$</th>
<th>Diff.</th>
<th>$SE_D$</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>24</td>
<td>50.6</td>
<td>10.18</td>
<td>2.08</td>
<td>3.4</td>
<td>2.48</td>
<td>1.37</td>
</tr>
<tr>
<td>Control</td>
<td>70</td>
<td>47.2</td>
<td>11.4</td>
<td>1.36</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean score for the experimental group is 50.6 and for the control group 47.2. The difference of 3.4 yields a critical ratio of 1.37, which is not statistically significant though it is in favor of the experimental group. The chances are 82 in 100 that this is a true difference.

Table XXI shows the comparison of mean scores in word meaning for children in both groups with I.Q.s below 90.

Table XXI
Comparison of Mean Scores in Word Meaning

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>$SE_M$</th>
<th>Diff.</th>
<th>$SE_D$</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>24</td>
<td>16</td>
<td>7.3</td>
<td>1.49</td>
<td>1</td>
<td>1.63</td>
<td>.613</td>
</tr>
<tr>
<td>Control</td>
<td>70</td>
<td>17</td>
<td>5.59</td>
<td>.668</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The mean for the experimental group on word meaning is 16. For the control group the mean is 17. The critical ratio of .613 is not statistically significant.

Table XXII shows the comparison of mean scores in paragraph meaning for children in both groups with I.Q.s below 90.

Table XXII
Comparison of Mean Scores in Paragraph Meaning

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE_M</th>
<th>Diff.</th>
<th>SE_D</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>24</td>
<td>19.0</td>
<td>8.98</td>
<td>1.84</td>
<td>1.2</td>
<td>2.05</td>
<td>.585</td>
</tr>
<tr>
<td>Control</td>
<td>70</td>
<td>17.8</td>
<td>7.64</td>
<td>.92</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the test of paragraph meaning the experimental group had a mean score of 19 while the control group had a mean score of 17.8. The critical ratio of .585 is not statistically significant.
CHAPTER V

Summary and Conclusions

The purpose of the study was to compare reading achievement at the middle of grade two of two groups of children who had had two different approaches to reading in grade one. There were 449 children in the experimental group and 662 in the control group. Achievement was based on the Standford Achievement Test, Word Meaning and Paragraph Meaning and three additional measures; ability to hear sounds in speech, ability to apply phonics, and scores on an attitude toward reading scale.

The following conclusions may be drawn:

1. The children in the experimental group were statistically superior on all tests except the attitudes. The difference on the attitudes scale was not significant but was in favor of the control group.

2. The differences between the children in the high I.Q.'s groups were not as significant as for the total population.
   a. Sounds in speech, word meaning and paragraph meaning were in favor of the children in the experimental group. The differences were not significant.
   b. Attitudes and applied phonics were in favor of the control group. These differences were not significant.

3. The differences between the children in the two groups with I.Q.s in the normal range were not consistent.
a. There were significant differences in favor of the experimental group in sounds in speech, and word meaning, and a slight difference in paragraph meaning.

b. The slight differences in attitudes and applied phonics were in favor of the control group.

4. The comparison of scores of children with I.Q.s below 90 were, in general, in favor of the children in the experimental group.

a. The difference in sounds in speech was statistically significant in favor of the experimental group.

b. The other differences were not significant and with the exception of the attitudes scale were all in favor of the experimental group.
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APPENDIX
## TEST I. Hearing Sounds in Words

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. p b t n a</td>
<td>1. garrulous  pertain  warrant</td>
</tr>
<tr>
<td>2. e p c d t</td>
<td>2. milligram  sweltering  shrapnel</td>
</tr>
<tr>
<td>3. d f g v h</td>
<td>3. chemist  stereogram  hydrocarbon</td>
</tr>
<tr>
<td>4. g k v l i</td>
<td>4. ponderous  spectacular  military</td>
</tr>
<tr>
<td>5. k r b d s</td>
<td>5. finesse  intended  rebuff</td>
</tr>
<tr>
<td>6. o s n b t</td>
<td>6. linoleum  periwinkle  cacaphony</td>
</tr>
<tr>
<td>7. y l d f g</td>
<td>7. brethren  noblemen  burlesque</td>
</tr>
<tr>
<td>8. f t j r b</td>
<td>8. premium  gypsyism  glaucoma</td>
</tr>
<tr>
<td>9. c d k m i</td>
<td>9. hexameter  generation  hydrogen</td>
</tr>
<tr>
<td>10. f v p h o</td>
<td>10. proficient  presumptive  dominant</td>
</tr>
<tr>
<td>11. l v n t u</td>
<td>11. cavalry  martinet  castinet</td>
</tr>
<tr>
<td>12. s q r z p</td>
<td>12. filiform  felonious  deciduous</td>
</tr>
<tr>
<td>13. c m a b o</td>
<td>13. meander  monotony  rancour</td>
</tr>
<tr>
<td>14. h m s e w</td>
<td>14. sheathing  shameful  collateral</td>
</tr>
<tr>
<td>15. m v e r a</td>
<td>15. bronchitis  platonic  breechblock</td>
</tr>
<tr>
<td>16. n e h a o</td>
<td>16. theorem  reckon  thermion</td>
</tr>
<tr>
<td>17. w q j n e</td>
<td>17. drammock  druidism  pyrogenic</td>
</tr>
<tr>
<td>18. j l s t y</td>
<td>18. eroded  chiseled  charbon</td>
</tr>
</tbody>
</table>
2.

C

<table>
<thead>
<tr>
<th>1. ind r bl x t ing</th>
<th>7. tion ex pl f h an</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. a m sp f d ng</td>
<td>8. ure g d sm k in</td>
</tr>
<tr>
<td>3. ar k st w ight p</td>
<td>9. op r en a l v</td>
</tr>
<tr>
<td>4. ous b sh th f con</td>
<td>10. o b sp el er ist</td>
</tr>
<tr>
<td>5. n ck for cl w ate</td>
<td>11. ent a be c n v</td>
</tr>
<tr>
<td>6. in ep ow tw a fl</td>
<td>12. d un gr b qu l</td>
</tr>
</tbody>
</table>

Score __________

TEST II. Attitude Scale

1. Do you like to have your teacher read a story to you?
   a  b  c

2. Do you like to take books from the library?
   a  b  c

3. Do you like to read a story to the class?
   a  b  c

4. Do you like to have a child read a story to the class?
   a  b  c

5. Do you like to get a book for a present?
   a  b  c

6. Do you like to have someone read to you at bedtime?
   a  b  c
7. Do you like to read by yourself when you stay indoors?
   a  b  c

8. Do you like to read in the summer?
   a  b  c

9. Do you like to read to someone at home?
   a  b  c

10. Do you like to learn new words each day?
    a  b  c

11. Do you like to try to read the funnies by yourself?
    a  b  c

12. Do you like to play reading games?
    a  b  c

13. Do you like to read signs?
    a  b  c

14. Do you like to do a reading paper?
    a  b  c

15. Do you like to go to the library corner when your work is finished?
    a  b  c

Score
1. glad pad mad Dad sad fad
2. jump pump clump stump lump dump
3. must rust crust dust gust trust
4. look hook nook brook shook cook
5. hill fill kill thrill drill spill
6. nest vest west zest test crest
7. found ground bound mound sound pound
8. pig dig wig jig rig fig
9. name fame lame flame game tame
10. eat treat meat heat beat neat
11. huff husk hunch hush hung hunt
12. let lend length lemon less level
13. cat cabin canvas cast camp cash
14. box bottle bobbin bond bottom body
15. wish wigwam width wicket wigwag winch
Directions for
TEST OF HEARING SOUNDS IN WORDS - GRADES 1-3
Boston University - 1955

The purpose of this test is to discover how well a child can identify sounds in spoken words. If a child is unable to identify sounds in spoken words, instruction in phonics or word recognition will make little progress. The test is suitable only for those children who know the names or forms of letters. If a child does not know his letters, the Murphy-Durrell Diagnostic Reading Readiness Test (World Book Co.) is recommended.

Give each child a marker of colored paper to use under each line. This will not only help to keep the child's attention on the correct line, but will also help the teacher to observe that each child has the correct place.

Directions: PART A

Print on the board the letters p b t n a, just as they appear on line one of the child's paper.

Say: "Today we are going to use our eyes and ears to see if we can find the right letters in words. You will need to listen and look carefully. Put your marker on the first line under the big letter A." (Check to see that each child has the right place). "I'll say a word and you are to listen to see if you can find the letter the word begins with. Listen - top. What is the first letter in top? Yes, t so you draw a circle around t on your paper." (Teacher draws a circle around t on the board). Check to see that each child has circled the correct letter.

"Now move your marker to the next line below. Now I will not help any more. Be sure you look and listen carefully. Ready. Draw a circle around the first letter in cup." Repeat the word, if necessary. Wait until the children have finished making a circle around the letter. This usually takes not more than five seconds. Count five slowly on all later words in this test.

Directions for the rest of the words: "Move your marked to number 3. Find the first letter in dog."

1. garden 9. machine 11. handle
2. recess 10. fountain 15. every
3. noise 11. vacation 16. olive
4. lemon 12. polish 17. waste
5. bacon 13. absent 18. supper

Directions: PART B

Say: "Now move your markers up to number 1 under the big letter B." Write on the board the words garrulous pertaining warrant.

"Now this time you are to listen for the last sound in the word. Listen to this word - spoon. Which word on the board has the same last sound as spoon? Yes, the middle one has the same last sound as spoon. So we draw a circle around it like this. Now draw a circle around it on your paper."
Part B - continued:

"Now move your marker down to number 2. Listen for the last sound in this word — until. Find the word that has the same sound at the end as until. Draw a circle around it.

Directions for the next four words: "Move your marker to number 3. Which word has the same last sound as visit? Draw a circle around it."

3. visit 4. wonder 5. railroad 6. company

On number 7 and following, the child listens for the first and last sounds.

Say: "Now on number 7, you are to listen for both the beginning and ending sounds." Write on the board the words brethren nobleman burlesque.

"Which of these words has the same beginning and ending sounds as between? (Wait for answers). "Yes, the first one begins and ends like between. So we draw a circle around it. You draw a circle around it on your paper."

Directions for the remainder of the words in PART B: "Move your marker to number 8. Find the word that begins and ends like geranium."


Directions: PART C

Write these letters on the board: ind r bl x t ing.

Say: "Now move your marker down to number 1 under C. Listen to this word blinding. Draw circles around all of the sounds you hear in blinding." (Teacher circles ind bl ing on the board). "How many of you circled these sounds?"

Write on the board a m sp f d or. Say: "Now find all of the sounds you can in this word sporadic. Which did you circle? Yes, sp, a and d. The other sounds are not on your paper."

For the rest of the words, say "On number 3, circle the letters you hear in this word - starlight."


Scoring: PART A - Count the number correct. Maximum score—17.
PART B - Count the number correct. Maximum score—16.
PART C - Count the number of parts of words circled correctly. Maximum score—33.
Test II, Attitude Scale

Write on the board -

1. Do you like to go in town with Mother?
   a     b     c

2. Do you like to stay indoors for recess in winter?
   a     b     c

"We are going to answer some questions about how you feel. There are no wrong answers. Let's do the first one on the board together. Do you like to go in town with Mother? -- a  b  c"

"If you do not like to go at all draw a circle around a, if you like to a little, draw a circle about b. If you like to very much, draw a circle around c. Let's do the second one. I'll read the questions and the answers and one of you may circle the answer on the board. Do you like to stay indoors for recess in winter?

a - not at all    b - a little    c - very much

I will read each question in your book and the answers, listen carefully and circle the one which tells how you feel. You will circle just one answer for each question. Listen carefully, be sure to answer just how you feel. Open your book to page 2. Find question 1. Do you like to have your teacher read a story to you?"

a - not at all    b - a little    c - very much

2. Do you like to take books from the library?
   a - not at all    b - a little    c - very much

3. Do you like to read a story to the class?
   a - not at all    b - a little    c - very much

4. Do you like to have a child read a story to the class?
   a - not at all    b - a little    c - very much

5. Do you like to get a book for a present?
   a - not at all    b - a little    c - very much

6. Do you like to have someone read to you at bedtime?
   a - not at all    b - a little    c - very much

7. Do you like to read by yourself when you stay indoors?
   a - not at all    b - a little    c - very much
8. Do you like to read in summer?
   a - not at all    b - a little    c - very much

9. Do you like to read to someone at home?
   a - not at all    b - a little    c - very much

10. Do you like to learn new words each day?
    a - not at all    b - a little    c - very much

11. Do you like to read the funnies by yourself?
    a - not at all    b - a little    c - very much

12. Do you like to play reading games?
    a - not at all    b - a little    c - very much

13. Do you like to read signs?
    a - not at all    b - a little    c - very much

14. Do you like to do a reading paper?
    a - not at all    b - a little    c - very much

15. Do you like to go to the library corner when your work is finished?
    a - not at all    b - a little    c - very much

Test III, Applied Phonics

Write these words on the board in a horizontal row:

   all  ball  tall  fall  wall  call

Say, "We are going to play a game using our eyes and ears. Look at these words on the board. The first word is all. I'm going to write 1 under all. Listen and see if you can find the next word I say, call."

Have a child find the word call and write 2 under it.

"Now listen for Number 3 tall. Who can find tall and write 3 under it?" Have one child respond.

"Listen for Number 4 fall." Have a child find fall and write 4 under it.

"Listen for Number 5 ball." Have a child write 5 under ball.

"We are going to do some more on our papers. We'll listen, look, and find the word, and write the number under it. Probably you cannot find all of them. Do the best you can. Ready!"

Row 1.  1. glad  2. pad  3. sad  4. mad  5. fad
Row 2.  1. jump  2. lump  3. clump  4. stump  5. pump
<table>
<thead>
<tr>
<th>Row 3</th>
<th>1. must</th>
<th>2. trust</th>
<th>3. gust</th>
<th>4. rust</th>
<th>5. dust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row 4</td>
<td>1. look</td>
<td>2. brook</td>
<td>3. hook</td>
<td>4. cook</td>
<td>5. shook</td>
</tr>
<tr>
<td>Row 5</td>
<td>1. hill</td>
<td>2. spill</td>
<td>3. kill</td>
<td>4. thrill</td>
<td>5. drill</td>
</tr>
<tr>
<td>Row 6</td>
<td>1. nest</td>
<td>2. test</td>
<td>3. west</td>
<td>4. zest</td>
<td>5. vest</td>
</tr>
<tr>
<td>Row 7</td>
<td>1. found</td>
<td>2. bound</td>
<td>3. pound</td>
<td>4. sound</td>
<td>5. mound</td>
</tr>
<tr>
<td>Row 8</td>
<td>1. pig</td>
<td>2. fig</td>
<td>3. rig</td>
<td>4. jig</td>
<td>5. wig</td>
</tr>
<tr>
<td>Row 9</td>
<td>1. name</td>
<td>2. flame</td>
<td>3. fame</td>
<td>4. tame</td>
<td>5. game</td>
</tr>
<tr>
<td>Row 10</td>
<td>1. eat</td>
<td>2. beat</td>
<td>3. heat</td>
<td>4. meat</td>
<td>5. neath</td>
</tr>
<tr>
<td>Row 11</td>
<td>1. huff</td>
<td>2. hunt</td>
<td>3. hung</td>
<td>4. husk</td>
<td>5. hunch</td>
</tr>
<tr>
<td>Row 12</td>
<td>1. let</td>
<td>2. lend</td>
<td>3. less</td>
<td>4. length</td>
<td>5. level</td>
</tr>
<tr>
<td>Row 13</td>
<td>1. cat</td>
<td>2. camp</td>
<td>3. cabin</td>
<td>4. cash</td>
<td>5. cast</td>
</tr>
<tr>
<td>Row 14</td>
<td>1. box</td>
<td>2. bobbin</td>
<td>3. body</td>
<td>4. bottom</td>
<td>5. bottle</td>
</tr>
<tr>
<td>Row 15</td>
<td>1. wish</td>
<td>2. winch</td>
<td>3. width</td>
<td>4. wicket</td>
<td>5. wigwam</td>
</tr>
</tbody>
</table>