This dissertation has been
microfilmed exactly as received 67-1732

ELDER, Richard Duncan, 1928-

A COMPARISON OF THE ORAL READING OF GROUPS OF SCOTTISH AND AMERICAN CHILDREN.

The University of Michigan, Ph.D., 1966
Education, psychology

University Microfilms, Inc., Ann Arbor, Michigan

# A COMPARISON OF THE ORAL READING OF GROUPS OF SCOTTISH AND AMERICAN CHILDREN

by

Richard Duncan Elder

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in the
University of Michigan
1966

Doctoral Committee:

Professor Irving H. Anderson, Chairman
Associate Professor Finley Carpenter
Associate Professor Benno G. Fricke
Professor M. Clemens Johnson

Abstract

A COMPARISON OF THE ORAL READING OF GROUPS OF SCOTTISH AND AMERICAN CHILDREN

By Richard D. Elder

This study compared the oral reading of groups of Scottish and American children. The object was to ascertain whether Scottish children obtain an advantage over American children by being introduced to reading at age 5 rather than 6 and by receiving a greater emphasis upon phonics in beginning reading.

The Scottish sample was taken from West Lothian County, Scotland. There is evidence that West Lothian County is representative of Scottish intelligence and attainments. The West Lothian sample consisted of 49 children selected systematically from eight primary schools representing the county. These children were in their third year of primary school; their mean age was about 91 months. Ypsilanti, Michigan, served as the source of the American samples. Twice as many pupils of the same mean age and of a mean age 12 months above that of the West Lothian sample were selected randomly from the second and third grade Ypsilanti school populations to obtain the specific numbers needed in each age-sex category. Oral reading was measured by The Gray Standardized Oral Reading Paragraphs Test.

The mean score of the West Lothian sample was compared with the norm for American children of the same age and with

the norm for American children a year older, in order to obtain evidence on the relationship between extent of schooling and maturity in learning to read orally. For the same reason, the mean score of the West Lothian sample was compared with the mean score of the Ypsilanti sample of the same age and that of the Ypsilanti sample a year older.

The principal results were as follows: 1) The mean score of the West Lothian sample was significantly above the test norm for American children of the same age, and the mean score of the Ypsilanti sample of the same age. Significant differences were not found between the mean score of the West Lothian sample and the test norm for American pupils a year older, nor between the mean score of the West Lothian sample and that of the Ypsilanti sample a year older. 2) A comparison of the rate of oral reading disclosed no significant difference between the West Lothian sample and the Ypsilanti sample of the same age, but it was found that the West Lothian sample read significantly slower than the Ypsilanti sample a year older. 3) A comparison of the accuracy of oral reading showed that the West Lothian sample read with significantly greater accuracy than the Ypsilanti sample of the same age, and no less accurately than the Ypsilanti sample a year older. 4) A comparison of the samples with respect to specific types of oral reading errors revealed that substitutions constituted a significantly larger percentage of the total errors of both Ypsilanti samples than

was the case for the West Lothian sample. This comparison also showed that mispronunciations comprised a significantly larger percentage of the total errors of the West Lothian sample than was the case for the Ypsilanti samples. It was further found that the West Lothian sample had a significantly lower percentage of words aided than the Ypsilanti sample of the same age, and did not differ significantly in this regard from the Ypsilanti sample a year older. 5) A comparison of the samples with respect to tendency to read for meaning, as indicated by substitutions which change meaning and the self-correction of these errors, disclosed that the West Lothian sample had a significantly greater tendency to make substitutions which change meaning than did both Ypsilanti samples. Although the Ypsilanti samples self-corrected a higher proportion of the substitutions which change meaning than did the West Lothian sample, the differences were not significant.

In general, the findings of this investigation demonstrate that West Lothian children are superior in ability to pronounce words accurately during oral reading. The early start appears to give them an initial advantage, as does the attention given to phonics. However, the evidence also demonstrates that West Lothian children may pay a price for the initial advantage they gain from these practices. For example, they tend to be relatively slow readers, and they tend not to use contextual flow of meaning to best advantage. In any case, the advantage of greater accuracy in oral reading

must be weighed against the other aims of instruction in general, and of the language arts in particular.

## ACKNOWLEDGMENTS

The data on the oral reading of the Scottish sample used in this study were originally obtained by other investigators in connection with a project supported by the Cooperative Research Program of the Office of Education, U.S. Department of Health, Education, and Welfare. The writer is indebted to Professor Irving H. Anderson, director of the project, for permission to use these data and to draw upon relevant parts of the project report. Professor Anderson's advice and encouragement in all phases of the present investigation have been highly valued.

The assistance of Professor M. Clemens Johnson with the statistical aspects of the study and the suggestions and encouragement of Professor Finley Carpenter and Professor Benno G. Fricke have been greatly appreciated.

The contribution of Dr. Carl R. Personke, a source of information on the West Lothian sample, is also gratefully acknowledged.

The writer also acknowledges the unstinting assistance rendered to him by the school administrators, the special service personnel, and the teachers of second and third grade classes in Ypsilanti, Michigan. Their cooperation was magnificent.

TABLE OF CONTENTS


| | | Page |
|---|---|---|
| ACKNOWLEDGMENTS | . . . . . | ii |
| LIST OF TABLES | . . . . . | viii |
| CHAPTER | | |
| I | Statement of the Problem . . . . . | 1 |
| | Purpose . . . . . | 1 |
| | Significance of the Study . . . . | 2 |
| | General Plan . . . . . | 15 |
| II | Sources of Samples . . . . . | 19 |
| | West Lothian County . . . . . | 19 |
| | General Information | |
| | Location | |
| | Population | |
| | Social class | |
| | Education in Scotland | |
| | Types of schools | |
| | School year | |
| | Teacher certification | |
| | Education in West Lothian | |
| | Number of schools | |
| | Operation of schools | |
| | Transfer examination | |
| | School leavers | |
| | Practices in the Teaching of Reading | |
| | Intelligence and Achievement of West Lothian children | |

TABLE OF CONTENTS (continued)


CHAPTER Page

Mental survey of 1947
Scholastic survey of 1953

Summary

Ypsilanti, Michigan . . . . . 33

General Information

Location
Population
Social class

Educational Practices

Composition of schools
School year
Teacher certification
Pupil-teacher ratio
School drop-outs

Practices in the Teaching of Reading

Intelligence and Scholastic Attainments

Summary

III Procedure . . . . . 45

Subjects . . . . . 45

Selection of Samples

West Lothian
Ypsilanti

Characteristics of the Samples

Size
Distribution by sex
Ages
IQ

Testing the Subjects . . . . . 53

Test instrument

Description
Cultural factor

TABLE OF CONTENTS (continued)


CHAPTER Page

Test Administration

IV Results . . . . . 59

Comparison of Mean Scores with Test Norms . . . . . 59

West Lothian Comparisons

Comparison of West Lothian sample with the test norm at the same age as the sample

Comparison of West Lothian sample with the test norm at 12 months above the mean age of the sample

Ypsilanti Comparisons

Comparison of Ypsilanti second grade sample with the test norm at the same age as the sample

Comparison of Ypsilanti third grade sample with the test norm at the same age as the sample

Comparison of Test Scores . . . . 64

Comparison of Oral Reading Rates . . 67

Comparison of Oral Reading Accuracy . 71

Comparison of Oral Reading Errors. . 74

Substitutions

Mispronunciations

Omissions

Repetitions

Insertions

Reversals

Words Aided

TABLE OF CONTENTS (continued)


| CHAPTER | | Page |
|---|---|---|
| | Comparison of Tendency to Read for Meaning . . . . . | 85 |
| | Substitutions which Change Meaning in Relation to All Substitutions | |
| | Substitutions Which Change Meaning among All Uncorrected Substitutions | |
| | Self-Correction among All Substitutions Which Change Meaning | |
| V | Summary and Conclusions . . . . . | 92 |
| | Problem . . . . . | 92 |
| | Procedure . . . . . | 93 |
| | Data Analysis . . . . . | 94 |
| | Results . . . . . | 96 |
| | Implications . . . . . | 99 |
| | Conclusions . . . . . | 103 |
| APPENDIX | | |
| A | Information on the Ages and IQs of Boys and Girls in the Samples . . . . . | 105 |
| B | The Paragraphs on The Gray Standardized Oral Reading Paragraphs Test . . . . . | 109 |
| C | Skewness and Kurtosis of Oral Reading Variables . . . . . | 114 |
| D | Distributions of the Oral Reading Errors of the Scoring-Samples. . . . . | 116 |
| E | Substitutions of the West Lothian Scoring-Sample . . . . . | 123 |
| F | Sutstitutions of the Ypsilanti Second Grade Scoring-Sample . . . . . | 134 |

TABLE OF CONTENTS (continued)

APPENDIX Page

G Substitutions of the Ypsilanti Third Grade Scoring-Sample . . . . . 143

BIBLIOGRAPHY . . . . . 159

LIST OF TABLES


| Table | | Page |
|---|---|---|
| 1. | Mean Estimated IQs of West Lothian and Scottish Children in 1947 Scottish Mental Survey | 30 |
| 2. | Sizes of Samples in Relation to Populations from Which They Were Drawn | 48 |
| 3. | Comparison of Sex Distributions within Samples | 49 |
| 4. | Mean Ages and Age Variances of the Samples | 50 |
| 5. | Comparison of Mean Ages of Populations and Samples | 50 |
| 6. | Comparisons of the Mean Age and Age Variance of the West Lothian Sample with the Mean Ages and Age Variances of the Ypsilanti Samples | 51 |
| 7. | Comparisons of Mean IQs of Ypsilanti Samples with Lorge Thorndike Norms | 53 |
| 8. | Comparison of West Lothian Sample with American Norm on Gray's Oral Reading Test | 61 |
| 9. | Comparison of West Lothian Sample with American Norm on Gray's Oral Reading Test at 12 Months above the Mean Age of the Sample | 62 |
| 10. | Comparison of Ypsilanti Second Grade Sample with American Norm on Gray's Oral Reading Test | 63 |
| 11. | Comparison of Ypsilanti Third Grade Sample with American Norm on Gray's Oral Reading Test | 63 |
| 12. | Comparison of the Mean Score and Variance of the West Lothian Sample with Mean Scores and Variances of the Ypsilanti Samples. | 64 |
| 13. | Distribution of Scores of West Lothian and Ypsilanti Samples | 66 |

LIST OF TABLES (continued)


| Table | | Page |
|---|---|---|
| 14. | Comparison of Percentages of Zero-Achievers in West Lothian Sample with Percentages of Zero-Achievers in Ypsilanti Samples . . . | 67 |
| 15. | Comparison of Rates of West Lothian and Ypsilanti Scoring-Samples . . . . . | 69 |
| 16. | Distribution of Rates of West Lothian and Ypsilanti Scoring-Samples . . . . . | 70 |
| 17. | Distribution of Accuracy Scores of West Lothian and Ypsilanti Scoring-Samples . . | 73 |
| 18. | Comparison of Percentage of Accuracy Scores above Median of West Lothian Scoring-Sample with Percentage of Accuracy Scores above Median of Ypsilanti Scoring-Samples . | 74 |
| 19. | Comparisons of Percentages of Substitutions in Relation to Total Uncorrected Errors of West Lothian and Ypsilanti Scoring-Samples. | 76 |
| 20. | Comparisons of Percentages of Substitutions of Around for Round of West Lothian and Ypsilanti Scoring-Samples . . . . . | 77 |
| 21. | Comparisons of Percentages of Mispronunciations in Relation to Total Uncorrected Errors of West Lothian and Ypsilanti Scoring-Samples. | 78 |
| 22. | Comparisons of Percentages of Omissions in Relation to Total Uncorrected Errors of West Lothian and Ypsilanti Scoring-Samples | 79 |
| 23. | Comparisons of Percentages of Repetitions in Relation to Total Uncorrected Errors of West Lothian and Ypsilanti Scoring-Samples. | 80 |
| 24. | Comparisons of Percentages of Insertions in Relation to Total Uncorrected Errors of West Lothian and Ypsilanti Scoring-Samples. | 80 |
| 25. | Comparisons of Percentages of Reversals in Relation to Total Uncorrected Errors of West Lothian and Ypsilanti Scoring-Samples. | 81 |
| 26. | Comparisons of Percentages of Partial Reversals in Total Substitutions and Mispronunciations of West Lothian and Ypsilanti Scoring-Samples. . . . . | 82 |

LIST OF TABLES (continued)


| Table | | Page |
|---|---|---|
| 27. | Comparisons of Percentages of Words Aided in Relation to Total Uncorrected Errors of West Lothian and Ypsilanti Scoring-Samples | 83 |
| 28. | Comparisons of Percentages of Substitutions Which Change Meaning among All Substitutions of West Lothian and Ypsilanti Scoring-Samples | 89 |
| 29. | Comparisons of Percentages of Substitutions Which Change Meaning among All Uncorrected Substitutions of West Lothian and Ypsilanti Scoring-Samples | 89 |
| 30. | Comparisons of Percentages of Self-Correction among All Substitutions Which Change Meaning of West Lothian and Ypsilanti Scoring-Samples | 90 |
| 31. | Distribution of Ages by Sex in Samples | 106 |
| 32. | Comparison of the Age of West Lothian Boys with the Ages of Ypsilanti Boys, And the Age of West Lothian Girls with the Ages of Ypsilanti Girls. | 107 |
| 33. | Comparisons of Ages of Boys with Ages of Girls within the West Lothian and Ypsilanti Samples | 107 |
| 34. | Comparisons of IQs of Boys with IQs of Girls within the Ypsilanti Samples | 108 |
| 35. | Distribution of Substitutions of the Scoring-Samples | 117 |
| 36. | Distribution of Mispronunciations of the Scoring-Samples | 118 |
| 37. | Distribution of Omissions of the Scoring-Samples | 119 |
| 38. | Distribution of Repetitions of the Scoring-Samples | 120 |
| 39. | Distribution of Insertions of the Scoring-Samples | 121 |

LIST OF TABLES (continued)


| Table | | Page |
|---|---|---|
| 40. | Distribution of Reversals of the Scoring-Samples . . . . . | 121 |
| 41. | Distribution of Words Aided of the Scoring-Samples . . . . . | 122 |

# CHAPTER I

# STATEMENT OF THE PROBLEM

## Purpose

This study compares the oral reading achievement of groups of Scottish and American children. The purpose was to obtain evidence regarding the following differences in educational practice:

1. Age of starting formal instruction. Scottish children are usually introduced to reading at the age of 5-plus (Inglis, 1948; Gray, 1956), while American children are generally introduced to reading instruction at the age of 6-plus (Gray, 1956; Austin and Morrison, 1963).

2. Nature of instruction. Scottish schools give more attention to phonics in beginning reading than do most American schools (Inglis, 1948; Russell, 1957). For example, Scottish primers include more special provisions for the application of phonics to reading than do American basal readers (Anderson et al, 1964). Also, Scottish teachers are more apt to separate the phonics instruction from the regular reading instruction and to reserve a special period for attention exclusively to phonics than are American teachers (Russell, 1957; Austin and Morrison, 1963).

In 1955, Rudolph Flesch published his book, Why Johnny Can't Read, in which he challenged the methods commonly employed to teach reading in the United States, notably the whole-word or look-and-say method. His book attracted widespread attention and became a best seller. Flesch contended that British children gain a year in reading achievement by being introduced to reading at age 5 rather than age 6. He further contended that American children lose another year by not being taught by phonic methods. However, Flesch offered no acceptable evidence to support these assertions, and he has since repeated the same arguments, again without offering any evidence to support them (Flesch, 1961). The present investigation offers a test of Flesch's assertions.

## Significance of the Study

This investigation is timely because of the movement under way to step up reading instruction in American schools. Since 1955, a number of other writers have questioned the wisdom of waiting until age 6 to introduce reading to children. In 1960, Hunter Diack, a British educational psychologist, accused Americans of delaying real teaching so long that many children, instead of getting ready, get bored waiting to be taught and lose interest. More recently, the distinguished scholar and linguist, Charles C. Fries (1963) implied very strongly in his book, Linguistics and Reading, that age 5 is not too soon to begin formal reading instruction.

Criticism of American educational practice can influence that practice. The American public, through selection of members of boards of education and through votes on bond issues and millage assessments, can and does exercise a strong control upon school policies. The rash of criticism and questioning which has appeared in the press and in many popular periodicals since 1955 has generated a general uneasiness about American methods of teaching reading. Periodic comments from scholars have "kept the pot boiling."

In the fall of 1958, Durkin began to study children in the public schools of Oakland, California, who had learned to read before admission to school. She found that 49 (0.96%) of 5,103 children entering the first grade recognized enough words to satisfy her test of ability to read (Durkin, 1961). Stanford-Binet IQs for these 49 children ranged from 91 to 161, with a median of 121. Durkin (1963) subsequently narrowed her study to 25 of those children who had neither transferred to other schools nor been double-promoted during the three-year period of the study. The IQs for these 25 children still ranged from 91 to 161, with a median of 115. After noting that the 15 early readers who had IQs of 120 or less seemed to have made relatively better progress in reading by the end of third grade than did the pupils with higher IQs, Durkin (1963, p. 150) tentatively suggested that "... children of relatively lower intelligence especially profit from an early start." Durkin (1963, p. 150) went on to say

that this might well mean that "...slower children need contact with learning to read that is spread out over time. Instead of postponement of reading instruction, they need an earlier start with it." She (1964a) later concluded, however, that the school-administered reading tests were not sufficiently difficult to establish the upper limits of accomplishment of the children whose IQs were 120 or higher. She therefore decided to test again at the end of sixth grade in the hope of obtaining more meaningful data.

An experiment which has attracted much attention is the one begun in the Denver Public Schools in 1960 (Brzeinski, 1964). About 2,000 children were given an intensive, formalized program of prereading readiness and beginning word recognition activities during their kindergarten year. Another group of about 2,000 pupils were assigned to control groups. During the first grade, half of the children from the experimental kindergarten groups were assigned to accelerated classes and the other half were assigned to regular classes in order to study the effects of the faster kindergarten pace. This procedure was also carried out with the children in the control groups. Brzeinski reported that the results at the end of 2 years of study appeared to establish an advantage for children who had an opportunity to learn elements of beginning reading in the kindergarten. Use of context and knowledge of letter names, sounds, and forms seemed to help pupils progress successfully when they began

to read in books in first grade. The research design provides for following the progress of these children through the sixth grade.

During the fall of 1961, Durkin (1963) screened 4,465 first-graders enrolled in the New York City Public Schools in Manhattan, the Bronx, Brooklyn, and Queens. She identified 157 (3½%) of those children as ones who knew how to read before admission to first grade. The median IQ for the group of early readers was reported to be 132. A correlation between IQ and reading achievement of .71 was also reported. Durkin's conclusions stressed the varied backgrounds of the early readers. She appeared to imply that many more children would be early readers if an appropriate environment were provided.

Van Wie and Lammers (1962) have proposed an individualized, combinational program for the kindergarten. They described such a program already in use in Nedrow and LaFayette, New York. In these communities kindergarten teachers initiate and pace, at their own discretion, 20 minutes of formal workbook and chart activities daily. First-grade teachers were reported to approve this program warmly. However, no comparative achievement data were supplied by the authors.

During the summer of 1962, the University Elementary School of the University of California in Los Angeles conducted an experimental program in reading instruction in kindergarten (Appleton, 1964). Twenty-six pupils aged 4½ to

6½ were involved. The IQ range for the group was 98 to 148, with a mean of 117. Appleton described this program as a structured one which was operated by a special teacher in a room adjoining the kindergarten room. Pupils were free to determine for themselves how often and how long they would work at reading. Several children spent a great deal of their time in the reading room. Some made only exploratory visits. Three of the 26 did not choose to participate at all. While Appleton reported that most of the children chose to take part in the reading program, she did not supply any data on reading achievement.

In 1963, Mary C. Austin and Coleman Morrison published the findings of their survey of the teaching of reading in American elementary schools. About three-fourths of the 795 cooperating school systems maintained kindergartens. Almost all systems with kindergartens reported giving attention to prereading readiness and reading, either incidentally or directly, as a regular part of the kindergarten program. A planned, sequential approach to reading was provided in 156 school systems, about one in every four. Furthermore, about one-third of those 156 systems offered reading instruction for whole classes. Considerable dissatisfaction with and questioning of current practices was reported. While planned reading instruction was generally not initiated until first grade in the vast majority of the reporting schools, teachers' opinions in this regard ranged from favoring earlier instruction for more children to favoring postponement of instruction for more children.

The Public Schools of Glenview, Illinois, in 1963 began to use a prereading readiness workbook program in about half of their kindergarten classes. By the conclusion of the workbook program, the children were being exposed to the use of context and letter-sound associations to recognize printed words. Hillerich (1965) reported that by the end of kindergarten the workbook group scored significantly higher on a prereading inventory of skills basic to beginning reading than did the control group. Of the 650 pupils who started kindergarten, 402 returned for first grade and 363 completed that year. The attrition was about the same in the experimental and control groups. At the end of first grade, the control group had significantly higher aptitude for success in reading, but the experimental group had significantly higher achievement in reading. All materials and tests used were standardized ones readily available through one publishing house. Hillerich did not indicate that any other nationally standardized tests of reading achievement were used to cross-check the reading achievement findings.

Geordiady, Romano, and Baranowski (1965) reported on an experiment conducted in 1963-1964 with 100 kindergarteners in one school system. Two units of 33 items each consisting of pictures, labels, and words were taught. The experimental and control groups were rotated for the second unit. For each unit, the groups were pretested, taught for 4 weeks, tested again, and then retested after 4 weeks. The results for the experimental groups were reported to show significant

gains in symbol recognition. Children in control groups assigned to the same teachers but not having the benefit of the teacher-directed activities in the two units did not show such gains. It was discovered that many children had a marked weakness in auditory discrimination. Teachers recorded many negative reactions from the pupils, even from the highly successful ones. The authors concluded that their findings were not conclusive evidence that children were ready for earlier initial reading experience.

Durkin (1964b) suggests that the current status of reading instruction in kindergarten involves two massive sets of pressure. One pressure is a movement to transfer to kindergarten what is now in first grade. The other pressure is from the opposite direction -- a reaction to defend what has been traditional for kindergarten. The latter stand she describes as following a road marked by nostalgic thinking and sentimentality, overemphasizing youngness and need for social and emotional development and overlooking the awareness, curiosity, and eagerness of today's preschoolers.

As of now, we do not have adequate evidence to judge which course of action is preferable. This investigation compares Scottish children who were first exposed to formal reading instruction at age 5 (kindergarten age for American children) and who received that instruction as a normal, expected part of their school program with American children who typically were first exposed to formal reading instruction

at age 6 and who received that instruction as a normal, expected part of their school program. It is felt that the comparisons contemplated in this study will shed light on the issue which Durkin has raised, without any danger of a Hawthorne effect.

This investigation can also be related to the movement under way to step up phonics instruction in American schools. The claims for phonics methods made by Rudolph Flesch in 1955 and 1961 were noted earlier. Since 1955, many newspapers and magazines have published numerous articles which attempted to explain the "phonics issue" to the general public. The result of this seemingly endless stream of articles appears to have been more confusion than insight. In 1960, a group of professors from Stanford University and the University of California, Berkeley, reported on their study of the curriculum of the San Francisco Public Schools. One of their basic recommendations (Bark and Rapoport, 1960, p. 19) was "...a systematically phonetic approach to reading." Even Fries (1963), while denying that he was advocating a phonic approach to the teaching of reading, nevertheless gave attention predominantly to aspects commonly included in various phonic-drill methods. In this matter the pot has been boiling very forcefully and quite noisily.

Few educators deny the utility of some emphasis upon phonics during the early years of reading instruction. However, many educators do question the utility, for English,

of any approach to the teaching of reading which involves a very pronounced emphasis upon phonics. Among the most widely used dialects of English one finds a minimum of 38 significant speech sounds (Hockett, 1958). Educators point to the fact that not a single one of these sounds of our language is represented in writing consistently with only one spelling. In fact, some of these sounds have up to 13 different spellings. Moreover, certain letters and combinations of letters are used to spell as many as seven different sounds (Soffietti, 1955; Francis, 1958). In short, whenever a child attempts to attack a word by using associations of sounds with letters, that child is invariably facing a single-stimulus, multiple-response situation. Hence, other cues are necessary. There are many instances of somewhat consistent use of certain letters or combinations of letters to represent particular sounds. However, the reliability of such generalizations varies through an exceedingly large range of percentage of occurrence in relation to exceptions. Clymer (1963) investigated the percentage of accuracy of 45 phonic generalizations commonly presented to children to help them unlock the pronunciation of unknown words. He found only 18 of those 45 rules to have at least a 75% frequency of accurate prediction of pronunciation. There were 12 rules which rendered accurate pronunciation less than 50% of the time. Fry (1964) cautiously proposed that there may be as many as 21 phonics generalizations which have sufficient frequency of occurrence among

the most commonly used words in English to warrant their being taught as rules.

Educators also question the utility of introducing certain aspects of phonic application at early ages. Hildreth (1961) postulates four general levels of phonic application:

1. The association of sounds with letters
2. The blending of sounds to form whole words
3. The grouping of words by the sounds they contain
4. The use of recurring sounds within words as clues to unfamiliar words.

She points out that the last level is really the heart of the matter of acquiring independence and that this level requires the ability to generalize and to abstract, as well as to synthesize. In short, children must be able to separate words into sounds in order to develop independence in phonics.

Dolch and Bloomster (1937) in a study of the relationship of phonics and mental ability concluded that higher mental ability was required to apply phonic principles than to memorize sight words. Children with a mental age below 7 failed in tests of ability to use phonics in breaking down words into elements as a method of recognizing words during reading. More recently, Bruce (1964) presented data which showed that children with a mental age below 7 were unable to overcome the cohesiveness of the word-sound pattern in their own experiences. McNeil and Stone (1965) found that kindergarten children did significantly better when trained to hear

sounds in nonsense syllables than when trained to hear sounds in meaningful syllables. In other words, a fundamental difficulty which underlies the development of the ability to make a phonic analysis of spoken words stems from the holistic nature of word sounds in the young child's experience. In young children, meaning appears to bind a series of sounds into a whole which cannot easily be analyzed until necessary mental growth occurs. This view is supported in general learning theory. Hovland (1960) states that the similarity between the original and the interpolated learning is one of the most significant factors affecting success. The task of responding with independent sounds to the stimulus of a word is not a familiar framework to the child, and the familiar learning set in relation to spoken words may be an interference in the new task. Prior to reaching the fourth level of phonic application, the child has been reinforced for combining sounds into words, not for separating words into sounds. Hence, separating words into sounds would constitute a much more complex learning step. It would appear, then, that a mental age of 7 stands for a necessary level of power in the ability to generalize and to abstract, as well as in the ability to synthesize.

Recent research into phonics approaches has tended to focus upon a commercial program titled Phonetic Keys to Reading (Sloop et al, 1952). This plan for primary grades is advertised as a co-basal reading series. Children use the series at the beginning of the year and fill out the balance

of the year by using any other basal reading system. In first grade, 26 weeks are spent in Phonetic Keys to Reading materials. In second and third grades, 15 weeks are required. The program stresses the sounds commonly associated with letters and phonic rules or generalizations which may be applied to reading. This plan differs from other phonic programs in that it introduces vowels and their sounds before it introduces consonants and their sounds. Another unique feature of this program is that it introduces about 70% of all the learning-to-read phonics rules in the first grade (Heilman, 1961). Thus, Phonetic Keys to Reading seems to advocate a phonics approach which runs counter to previously cited evidence on validity of phonics generalizations and on age for introducing phonics generalizations.

In 1955, Henderson reported on her 3-year longitudinal study of the Phonetic Keys to Reading program compared with a popular basal reading system. Her comparisons produced significant t-ratios in favor of the phonics approach on all reading variables. In 1957, Sparks and Fay presented their findings for a similar investigation. By the end of first grade the experimental group was superior to the control group in comprehension and vocabulary. However, by the end of the third and fourth grades, there were no significant differences between the groups in vocabulary, comprehension, or speed. In 1963, Morgan and Light presented comparisons made at the end of third grade for the same type of investigation.

Significant F-ratios favoring the control (basal) group were reported on the variables of vocabulary and comprehension. However, the achievement of all experimental and control groups was above the norms. Most recently, Cleland and Miller (1965) reported on a 1-year study of the same type as the ones cited above. At the end of first grade, there was no evidence that either method of teaching beginning reading was superior when the reading and spelling scores of the groups were compared. These four studies have provided us with very little common ground for agreement.

Writers on the subject of phonics in reading are divided into two widely opposing factions. The proponents of phonics seem to believe that sets of rules governing the pronunciation of letters form the one true road to success in reading. The opposition seems to believe that phonics instruction achieves its greatest validity when it is combined with other approaches to word analysis.

As of now, we do not have adequate evidence to judge which course of action is better. This investigation compares Scottish children, whose basal program typically introduces and stresses phonics from the beginning, with American children, whose basal program typically introduces phonics gradually and as part of a combination of word analysis techniques. In both cases, the approaches are a normal, expected part of the

school program. It is felt that the comparisons contemplated in this study will shed light on the question of phonics emphasis, without any danger of a Hawthorne effect.

## General Plan

As stated before, this investigation compares the oral reading of groups of Scottish and American children. The object was to ascertain whether Scottish children obtain an advantage over American children by being introduced to reading at age 5 rather than age 6 and by receiving a greater emphasis upon phonics in beginning reading.

The Scottish sample was taken from West Lothian County, Scotland. The West Lothian pupils were originally included in a cooperative research project co-sponsored by the University of Michigan and the Office of Education, U.S. Department of Health, Education, and Welfare (Anderson et al, 1964). The test used was Gray's Standardized Oral Reading Paragraphs. The oral reading of the children was recorded on tapes. These tapes were made available for this further investigation.

At the time of the testing in Scotland, the mean age of the West Lothian sample was about 91 months. This placed them in their third year of primary school. Gray's test was given to a similar group of American children of the same mean age. These children were in the second grade of their schools. In addition, Gray's test was given to a group of American pupils whose mean age was 1 year above that of the

West Lothian sample. These pupils were in the third grade of elementary school. Ypsilanti, Michigan, served as the source of the American samples.

The following specific comparisons were included:

1. The mean scores of the samples were compared with the norms on Gray's test. The mean score of the West Lothian sample was compared with the norm for American children of the same age as well as for that of American children 1 year older. The latter comparison would tend to equalize years of formal instruction, but give American children the benefit of an additional year of maturity. Such a comparison might shed light on the relationship between extent of instruction and developmental factors in learning to read orally. In addition, the mean scores of the Ypsilanti samples on Gray's test were compared with the norms for American pupils of the same ages to obtain evidence on the quality of these samples.

2. The West Lothian test scores were compared with the Ypsilanti test scores. Comparison of the mean score of the West Lothian children with the mean score of the Ypsilanti second graders, who are of the same age, involves an instructional advantage favoring the Scottish sample. Comparison of the mean score of the West Lothian pupils with the mean score of the Ypsilanti third graders, who are 1 year older, tends (as in the case of the comparison of the mean score of the West Lothian sample with the norm for American

children 1 year older) to equalize the amount of instruction received and involves a maturational advantage favoring this American sample. It is believed that this design, just as in the case of comparisons with the norms, may shed light on the problem of the relationship between extent of instruction and maturity in learning to read orally. The comparisons of the West Lothian and Ypsilanti test scores included comparisons of variances, since educators want to know if one educational system produces greater variability than another, apart from differences between mean scores.

3. Since it can be hypothesized that an emphasis on phonics in beginning reading may retard the speed with which a child reads, the West Lothian oral reading rates were compared with Ypsilanti oral reading rates.

4. One could also hypothesize that an emphasis on phonics in beginning reading would promote generally accurate oral reading, albeit slow reading. Therefore, the accuracy of the oral reading of the West Lothian and Ypsilanti samples was compared, in addition to the comparisons of the rate of oral reading.

5. The West Lothian and Ypsilanti samples were compared with respect to specific types of oral reading errors. Here, one could hypothesize that the West Lothian children would tend to have more errors than the Ypsilanti children involving the mechanics of pronunciation, and relatively fewer errors than the Ypsilanti children stemming from

guessing and inability to analyze words.

6. Finally, the West Lothian and Ypsilanti samples were compared with respect to tendency to read for meaning, as indicated by word substitutions which change meaning and by the self-correction of these errors. The object was to find out how the amount of stress on phonics in beginning reading might be related to tendency to read orally for meaning.

Since all of the above comparisons were made with American children of the same age as the Scottish sample as well as with American children 1 year older than the Scottish sample, it should be possible in each instance to make a judgment as to how much the results are influenced by the age of starting on the one hand and the nature of the instruction on the other.

# CHAPTER II

## SOURCES OF SAMPLES

As reported earlier, West Lothian County served as the source of the Scottish sample, and Ypsilanti, Michigan, served as the source of the American samples. This chapter describes the populations from which these samples were drawn. The description of West Lothian County was compiled and written previously for the cooperative research project in which the West Lothian sample was included (Anderson et al, 1964). Except for deletions and slight modifications, that description is quoted here, in extenso, with the permission of the project director. The description of Ypsilanti, Michigan, is the original work of the investigator.

### West Lothian County

#### GENERAL INFORMATION

Scotland has 35 local Education Authorities: 4 city and 31 county units. The city units are Aberdeen, Dundee, Edinburgh, and Glasgow. No single city unit is representative of Scottish intelligence and attainments, as three are distinctly above the British norms on mental and scholastic achievement test performance and one is distinctly below these norms. West Lothian County combines four large

communities with a number of smaller settlements and a large rural area. Hence, it was chosen because it presented an opportunity to test in different situations within the same administrative unit.

Location. Topographically, Scotland contains three well-defined regions. To the north are the Highlands, where mountains and moors limit the population to small pockets of arable land. To the south lie the Southern Uplands, a region of rolling hills noted for sheep farming and its woolen textile industry. Between these regions lie the Central Lowlands, a belt extending across Scotland from the Firth of Forth to the Firth of Clyde. This manufacturing and agricultural heartland supports two-thirds of the population while using only one-tenth of the land area of Scotland. West Lothian is located on the southern shores of the Firth of Forth, between Glasgow and Edinburgh, in this most highly industrialized and most populous region.

Population. In 1961, Scotland had a population of 5,178,480, with about 38% of that total residing in the four major cities. In that same year, the population of West Lothian was 92,764, about 1.8% of the total population. From 1951 to 1961, the population of Scotland increased by 1.6% while the population of West Lothian increased by 4.7%. The 1951 Scottish Census reports that 92.1% of the general population and 94.7% of the people living in West Lothian in that census year were born in Scotland.

Social class. About 31% of West Lothian's employed population are engaged in some form of manufacturing. The principal industries include distilleries, fire-clay works, hosiery making, and iron, steel, and brass foundries. In Scotland as a whole, the percentage employed in manufacturing is about 39%.

More than a fourth of the employed population of West Lothian work in coal and oil shale mines (West Lothian County Council, 1958). Mining occupies only about 5% of the working population of Scotland as a whole.

Professional and white-collar groups constitute a rather small percentage of the employed population of West Lothian. The 1951 Scottish Census classified 9.4% of the employed male population of West Lothian in these groups. In Scotland, the percentage so classified is 16.1%.

A large part of the rural area of West Lothian is not under cultivation. Only 3% of the population is engaged in agricultural pursuits. For all Scotland, only about 5% of the total working population are so engaged.

## EDUCATION IN SCOTLAND

In Scotland, school attendance is compulsory for all children between the ages of 5 and 15. The central authority for education is the Scottish Education Department, which operates under the direction of the Secretary of State for Scotland. This official is directly responsible to Parliament.

Local authority is vested in the County Council, functioning as Education Authority, which is responsible for making adequate provision for the educational needs of its area through a plan approved by the Scottish Education Department.

The Schools (Scotland) Code regulates conduct of schools in such matters as teacher qualifications, class size, and the education to be provided (British Information Service, 1960). The Scottish Education Department is limited to an advisory role in matters of curriculum and methodology.

Types of schools. Scotland has three types of schools: public ones managed by the Local Authority; grant-aided ones conducted by voluntary managers; and, independent or private ones which receive no assistance from public funds. In January, 1961, there were 886,918 students attending 3,301 public and grant-aided schools. Those students constituted 97.8% of the total number receiving an education (Scottish Education Department, 1962).

Primary education is usually a 7-year program for children from ages 5 to about 12. While some areas provide nursery schools for children under 5, attendance is compulsory only from age 5. The transfer of pupils from Primary VII to secondary schools usually occurs between the ages of 11½ and 12½ years. The allocation of children to different types of secondary schools is based on a competitive examination, known as the Transfer Examination, which is administered during

the last year of primary school.

There are two types of secondary schools: Junior Secondary Schools, which provide a 3-year terminal program until the school leaving age of 15; and, Senior Secondary Schools, which offer 5 to 6 years of courses, culminating in an examination for the Scottish Leaving Certificate. These certificates are required for entrance to universities and training colleges.

School year. Schools are in session for a minimum of 200 days or 40 weeks a year. The school year consists of 3 terms: the autumn term, usually from the last week of August until Christmas; the spring term, as a rule the period from January to Easter; and, the summer term, generally from Easter until the end of June or a date early in July. The school day is typically 5½ hours long.

Teacher certification. Teachers in Scotland are required to possess a certificate awarded upon successful completion of a program of professional training. All male teachers, except specialist teachers of art, music, physical education, and technical subjects, must possess a university degree (Whitaker, 1961). Primary teachers are certificated upon satisfactory completion of a 3-year program in a college of education (training college). Secondary teachers must be university graduates with 1 additional year of training college work. During the 1960-61 session, Scotland employed 36,260 certificated teachers. In October, 1961, 36.4% of all teachers and 15.1% of primary teachers in Scotland were men

(Scottish Education Department, 1962).

## EDUCATION IN WEST LOTHIAN

Number of schools. The West Lothian educational system generally conforms to the accepted pattern of organisation for Scotland. During the 1961-62 session, West Lothian maintained 47 schools, excluding one small independent school. There were 31 primary schools, 10 combined primary-junior secondary schools, 5 junior secondary-senior secondary schools, and 1 wholly senior secondary school. All these facilities were operated on a coeducational basis. Two of the primary schools were of the one-room type. Seven primary buildings did not include the entire 7-year range of primary classes. Primary divisions ranged in size from 24 to 874 pupils, totaling 11,334; junior secondary ranged from 97 to 476, totaling 3,907; and, senior secondary ranged from 184 to 530, totaling 2,227.

Operation of schools. Children are assigned to schools on the basis of the geographical location of their homes. New admissions in the infant divisions (Primary I) are accepted at the beginning of autumn and summer terms. If a child is already 5 years old or will reach that age by December 1, he is admitted to school late in August; otherwise, he must wait until the Easter period. The school day in Primary I and II (the infant division) is normally 4½ hours long; the school day for all other pupils, usually 5½ hours long. In the primary departments the teacher of any level or grade is

responsible for all subjects, unless special teachers are available in such areas as art, music, and needlework. Teachers generally remain with a class for the whole session. In the junior and senior secondary divisions the subjects are taught by different teachers on the basis of content specialization. A teacher shortage has resulted in the hiring of some uncertificated personnel. During the 1960-61 session, 5.5% of all Scottish teachers were uncertificated. During the same period, 8.5% of the teachers in West Lothian lacked full certification (Scottish Education Department, 1962). For the year 1960-61, the pupil-teacher ratio in Scotland was 23.1 to 1, while in West Lothian it was 22.9 to 1.

Transfer examination. About one-third of West Lothian pupils are assigned to the senior secondary schools as a result of the transfer examination, close to the national average. For the 1960-61 session, the examination for transfer to the secondary schools had the following components: Moray House Verbal Reasoning Test, Moray House Attainment Tests in English and Arithmetic, two additional papers in problem arithmetic and composition, and the headteacher's scaled estimate of ability to profit from secondary education, as inferred from each child's history of achievement in school subjects.

School leavers. During the 1960-61 session, 70.9% of West Lothian children left school at the school leaving age of 15, while nationally 66.9% terminated their formal education at this point (Scottish Education Department, 1962).

During the same session, 12.5% of children aged 15 to 17 were enrolled in school in West Lothian, while 19.1% of that total Scottish age group were attending school (Scottish Education Department, 1962). Furthermore, during that same session 11% of West Lothian students completed the 5-year secondary program as compared with 14% across all Scotland.

## PRACTICES IN THE TEACHING OF READING

The Scottish Education Department recognizes the value of a prereading readiness program. West Lothian primary teachers are provided with a syllabus which outlines sensory discrimination, language, and other readiness-type activities to be used before formal reading instruction is introduced. Teachers are urged to postpone reading instruction for about a month to give children a chance to adjust to school. Since heads of schools are not required to follow precisely recommendations as to curriculum and methods, the degree to which such recommendations are followed in detail varies from school to school. The Scottish Education Department indicates that insufficient time is allowed in Scottish infant schools for prereading experiences. It is probably safe to say that reading instruction is generally begun in West Lothian during the first weeks of the autumn school session.

Since reading pervades so much of the school day, appearing on teacher's weekly planning schedules under such titles as dramatization, poetry, library, and the like, it is difficult to specify the exact amount of time allotted to it.

It is likely, however, that as many as 5 to 6 hours weekly are devoted to instruction and directed practice in reading, in one way or another.

Scottish schools have long stressed phonics in beginning reading instruction (Inglis, 1948; Luke, 1931). The recent trend has been to introduce reading by the look-and-say or whole-word method, deferring systematic instruction in phonics until later (Scottish Education Department, 1955). Regular, systematic exercises in phonic analysis are recommended for pupils in Primary II, the stage at which such instruction is believed to have the most initial value because pupils accept the importance of such learning as they are increasingly confronted with unfamiliar words.

West Lothian teachers are urged to combine and adapt the whole-word, sentence, and phonic methods in accordance with individual pupil needs. It is recommended that phonics be introduced after children can read words and sentences by the look-and-say method with ease and when they have become word conscious and interested in sounds. In actual practice, West Lothian teachers appear to follow the recommendation of introducing reading through whole-word and sentence methods. However, these teachers vary considerably in the point at which phonic analysis is introduced. Among the schools sampled in this study, the variation ranged from prereading phonics instruction to deferment of phonics until Primary II. It would seem reasonable to conclude that most West Lothian

teachers quite probably provide some systematic instruction in phonics during the first year of school.

Oral reading is generally considered the procedure through which pupils acquire the techniques of reading and by which teachers can best assess progress. Therefore, oral reading is stressed in infant departments. By the time a child leaves Primary II, he is expected to be able to read aloud with fluency from books suitable to his age.

After pupils have acquired some mastery of the mechanics of reading, increasing attention is given to silent reading and to the interpretation of the message content. Study-type silent reading is also introduced at this time. Three types of study reading are recognized: general comprehension, detailed comprehension, and specific information.

In West Lothian, a minimum of 1 period a week is devoted to recreational reading. Children select their own materials from class or community libraries. Teachers are encouraged to show acceptance of children's taste while gradually guiding them to books of better quality.

The most commonly used readers in West Lothian for regular reading instruction include: Happy Venture Reading Books, Vanguard Readers, and Janet and John in Primary I and II; Radiant Readers, Wide Range Readers, and First Aid Readers in Primary III through VII. These series are found throughout Scotland, and they have in their teacher guides recommended phonic exercises almost from the start. The Janet

and John series is an adaptation of an American one known as the Alice and Jerry series and published by Row Peterson, Inc. The fact that the initial consonants in the names of the characters are the same in the British version may not be an accident.

Teachers are advised to provide for slower achieving pupils through the use of simpler materials and special instruction in small groups. In some cases, the head teacher works with such pupils. Two schools have recently initiated reading laboratories on an experimental basis. Otherwise, no special corrective or remedial reading programs existed in West Lothian. There are, however, Adjustment Classes for pupils who are generally backward.

## INTELLIGENCE AND ACHIEVEMENT OF WEST LOTHIAN CHILDREN

Mental survey of 1947. In 1947, the Scottish Council for Research in Education administered a group test of intelligence to the population of 11-year-old children attending schools in Scotland (Scottish Council for Research in Education, 1958). Almost all pupils in that age group were included. The test involved both verbal and picture items. Since the picture items were used to spread out the children who obtained very low scores on the verbal items, the verbal items constituted the substance of that test. With a maximum score of 76 possible, the West Lothian mean verbal score (36.8) did not differ significantly from the Scottish mean (36.7).

The Scottish Council for Research in Education (1933) conducted a similar assessment in 1932. The difference between means at that time was also not statistically significant. It would appear that West Lothian has in this regard been rather representative of Scotland for a substantial period of time.

In order to compare scores on the aforementioned verbal tests with Stanford-Binet IQs, the investigators administered the Stanford-Binet Scale, 1937 Revision, to a representative sample of 1,215 of the children in the 1947 survey. Application of a suitable regression equation to these results made it possible to express the verbal test scores in Stanford-Binet IQ equivalents. These equivalencies, as summarized in Table 1, further support the view that West Lothian children seem to be a normal group.

TABLE 1

MEAN ESTIMATED IQS OF WEST LOTHIAN AND SCOTTISH CHILDREN IN 1947 SCOTTISH MENTAL SURVEY

| Group | Mean Verbal Score | Mean Estimated Stanford-Binet IQs | |
|---|---|---|---|
| | | Boys | Girls |
| West Lothian | 36.80 | 100.9 | 98.9 |
| Scotland | 36.70 | 100.8 | 98.7 |

Scholastic survey of 1953. The Scottish Council for Research in Education (1963) conducted a survey during 1953 of the school achievement of 10-year-old children in Scottish schools. The tests utilized sampled attainments in the areas of mechanical arithmetic, arithmetic reasoning, English usage, and English comprehension. West Lothian was somewhat above the Scottish mean on all four tests. However, only on the English usage test was the difference significant (5% level), and the difference was very small (1.45 for a population of 1,399). It would seem that West Lothian is, in general, rather close to the Scottish average in achievement.

## SUMMARY

The principal facts about West Lothian as the source of the Scottish sample may be recapitulated as follows:

1. West Lothian is located in the most densely populated region of Scotland.

2. Various kinds of industry account for a substantial majority of the employed working force in West Lothian.

3. The educational system of West Lothian conforms generally to the pattern of organization for Scotland as a whole.

4. The percentage of uncertificated teachers in West Lothian is somewhat higher than in Scotland as a whole.

5. The pupil-teacher ratio is comparatively favorable.

6. West Lothian employs a transfer examination for promotion to the secondary program just as do the other Education Authorities.

7. A larger percentage of West Lothian children leave school at the legal leaving age than in Scotland as a whole.

8. Practices employed in the teaching of reading in West Lothian are similar to practices employed in other parts of Scotland.

9. Oral reading is stressed during the early school years.

10. The basal readers used in West Lothian are the same as those used in primary schools in the rest of Scotland.

11. Mental and scholastic surveys have shown that West Lothian is reasonably representative of Scottish intelligence and attainment.

# Ypsilanti, Michigan

## GENERAL INFORMATION

In 1960, Michigan's urban areas contained 73.4% of its total population. At that time, 63.1% of the total popululation of the United States resided in such areas. More Americans live in cities with a population between 10,000 and 25,000 than in any other single urban setting. In 1960, this urban category included 9.8% of the total population of the United States and 3.8% of the population of Michigan. Ypsilanti is one of these urban settings.

Location. Ypsilanti is located about 31 miles west of Detroit, which is the fifth largest city in the United States and the hub of the most densely populated and highly industrialized region of Michigan. Lying on the eastern fringe of Washtenaw County, Ypsilanti is the second largest city in the county and the site of Eastern Michigan University. Five major automotive plants lie in or near the community. One plant within the city is currently expanding its operations.

Population. In 1960, Michigan had a population of 7,823,194, representing 4.4% of the total population of the United States. The population of Ypsilanti in 1960 was 20,957, less than 1% of the Michigan total. Ypsilanti's population increased by 14.5% from 1950 to 1960, as compared with an increase of 22.8% for Michigan and 18.5% for the nation as a whole during that decade.

In 1960, Ypsilanti had a lower percentage of foreign-born (3.4%) than Michigan (6.8%) or the nation (5.4%). In the same year, the percentage of nonwhite population in Ypsilanti was 22.6%, as compared with 9.4% for Michigan and 11.4% for the United States as a whole. The U. S. Census Bureau estimates that 19 out of 20 nonwhites are Negro.

Ypsilanti's population reflects the social mobility associated with industrial growth and development when that population is viewed in terms of percentages of native and migrant inhabitants. Native population includes those who in 1960 were living in the state of their birth. Defined as such, 58.5% of Ypsilanti's population was classified as native population, as compared with 72.1% for Michigan and 70.3% for the nation as a whole. Migrant population includes those 5 years of age and older who lived in a different county in 1955, either within or outside the state of Michigan. As so defined, 26.4% of Ypsilanti's population was classified as migrant, as compared with 14.4% for Michigan and 17.4% for the United States.

Social class. Some indication of social class may be inferred from comparisons of occupation, income, and educational level attained by the adult population. In 1960, white-collar occupations engaged 42.8% of Ypsilanti males and 40.1% of Michigan's and 34.8% of the nation's males. At that time, 36% of the male population of Ypsilanti was engaged in some form of manufacturing, compared with 38% for Michigan

and 19.5% for the country as a whole. The major industries of Ypsilanti include the manufacture of motor vehicle parts and accessories, plastic products, fabricated metal products, machinery, and meat processing.

The median income of families in Ypsilanti in 1959 ($6,304) was higher than that for Michigan ($6,256) or for the nation as a whole ($5,660). During that year, 16.7% of Ypsilanti's population earned less than $3,000, as compared with 15.7% for Michigan and 32.5% throughout the United States. At the other extreme, 18.9% of Ypsilanti's population earned $10,000 or more, as compared with 17.4% for Michigan and 12.1% for the nation.

The middle-class character of Ypsilanti is further reflected in the educational level of the population. In 1960, 13.6% of Ypsilanti males, 25 years of age or over, had completed 16 or more years of schooling, as compared with 8.4% for Michigan and 9.7% for the United States. Moreover, 46.3% of the adult population had completed high school, as compared with about 41% for Michigan and the nation as a whole.

## EDUCATIONAL PRACTICES

Composition of schools. According to Michigan law, children must attend school between the ages of 6 and 16 unless they are physically or mentally unable to do so. School districts may provide kindergartens for children 5 years of

age, but attendance is not compulsory. Nursery schools for children under the age of 5 are not considered a part of the public school system.

During the 1963-64 school year, the Ypsilanti School District maintained 11 elementary schools, 2 junior high schools, and 1 senior high school. These schools enrolled 4,390 elementary and 2,765 secondary children. The enrollment of the Rackham Laboratory School, a special education facility located on the campus of Eastern Michigan University, is included in the above figures, as the Rackham School operates through the Ypsilanti Public Schools in order to obtain available state aid. Another laboratory school, Roosevelt, is also located on the campus of Eastern Michigan University, but it operates independently of the public schools. Even though the Roosevelt Laboratory School has a selective admissions policy, that facility is included in this study because it does operate at public expense and does enroll the bulk of its pupils from the area served by the Ypsilanti School District. During 1963-64, Roosevelt School enrolled 176 elementary and 372 secondary pupils. In addition, 789 children, or about 9% of the total school-age population, attended a nonpublic school which is maintained by a religious group. Children from this church-related school were not included in the present investigation.

School year. In Michigan, local school boards decide the length of the school year, which may not legally be less

than 9 months or 180 school days of membership. A school month is defined as 4 weeks of 5 days each. The school year may, and sometimes does, exceed this minimum. The average length of the school year in the United States as a whole is 179.1 days (NEA Research Bulletin, February 1964, p. 14). The school day is typically 5½ hours long.

In Ypsilanti, children are assigned to schools on the basis of the geographic location of their homes. Children are admitted to kindergarten in September if they reach the age of 5 by December 1. Kindergarten children attend school on a half-day basis. Half-days are about 2½ hours in duration. Children may enroll in first grade in September if they reach the age of 6 by December 1. The school day for the elementary grades is about 5½ hours long; for the secondary grades, about 6½ hours long. During the 1963-64 school year, Ypsilanti children attended classes for 181 days.

Teacher certification. Michigan teachers must possess a valid teaching certificate issued by the State Board of Education in order to be considered qualified. Certificates are granted to graduates of accredited colleges or universities who have completed 20 semester hours of professional education course work, including methods courses and a directed teacher practicum. Local school boards may employ uncertificated persons on an emergency basis. During 1961-62, 8.9% of Michigan's and 6.3% of the nation's teachers were uncertficated, according to estimates of the National

Education Association (1962). During this time, none of Ypsilanti's teachers lacked certification. Since there are many elementary-school teachers in service who hold permanent certification based upon less college work than the current 4-year or bachelor's degree standard, it is important to consider qualification in terms of completion of the bachelor's degree. Reports for 1963-64 from 32 states and the District of Columbia show that percentages of elementary-school teachers in service holding the bachelor's degree ranged from 26.5% in South Dakota to 99.8% in Oklahoma (NEA Research Bulletin, December 1964, pp. 120-21). No report was listed for Michigan. The median percentage for the 33 reports was 87.2%. During 1963-64, 98.4% of Ypsilanti's elementary-school teachers possessed a bachelor's degree. Again, Ypsilanti's teachers compare quite favorably in the matter of qualification.

Pupil-teacher ratio. The pupil-teacher ratio in the fall of 1963 was 24.1 to 1 in the United States (NEA Research Bulletin, February 1964). At that time, the pupil-teacher ratio in Ypsilanti was 25.1 to 1. Most recent data for Michigan show a ratio of 26.1 to 1 in the fall of 1961, when the United States ratio was 25.6 to 1 (National Education Association, 1962).

School drop-outs. Children in Michigan must attend school until the age of 16. According to the 1960 census, 80.1% of youth aged 16 and 17 remained enrolled in school in

Ypsilanti, compared with a Michigan average of 84.7% and a national average of 80.9%. These statistics indicate that Ypsilanti's holding power with students after the permissible leaving age of 16 is rather typical of the state and nation.

## PRACTICES IN THE TEACHING OF READING

The Michigan Department of Public Instruction places responsibility for curriculum development on local communities. This policy is predicated on the belief that the real curriculum is the scope of learning experiences which go on in a school and a community and which fit their particular needs. Hence, their view is that curriculum development cannot be improved in any way by directives from a state agency (Poor and Griffith, 1959).

The schools involved in this study do not have any formal, mandated curriculum guide. Each building adapts to the population it services. During each month of the school year, inservice meetings of teachers are held to explore, plan, and assess matters of curriculum, teaching methods, and instructional materials. Some of these meetings bring together teachers from the various buildings on the basis of grade-levels taught. Specialists and experts in different fields are frequently invited to address these inservice meetings.

Even though there is considerable emphasis upon individual pupil differences, the observed practices in these

schools have much in common. The kindergarten year is devoted primarily to prereading readiness activities designed to influence children's attitudes, knowledge, specific abilities, and motor skills. Sensory perception and discrimination, memory, reasoning, and language power are stressed. Much attention is given to concept acquisition. Pupils who show readiness for reading during this period are usually introduced to reading through the language-experience approach -- i.e., through the use of simple narrative material selected from the conversation of children and recorded on chart paper.

In general, most children are introduced to reading sometime early in the first grade when they are about the age of 6, or somewhat above that age. The first words are commonly taught as sight words by the whole-word or look-and-say method. These sight words are then used to call attention to phonic similarities. Comprehension is stressed from the beginning so that children may use pictorial, phonic, structural, and contextual clues to best advantage.

Since there is no prescribed time sequence and no single, uniform pattern for the introduction of specific reading skills and abilities, the scope and sequence of the developmental reading program hinges upon the nature and implementation of the basal reading series and supplementary materials utilized by teachers. These schools were observed to have a wide variety of basic and supplementary materials.

There is no single basal adoption. Rather, every major basal reading system is represented in these schools. Furthermore, basal reading programs are not the only approach to the teaching of reading. Each school has a library, and children use these libraries from 1 to 2 hours weekly. Thus, habits of independence are fostered from the beginning.

Teachers spend more time on reading instruction in the early elementary grades than in the later elementary ones. Early-elementary teachers devote as much as 2 hours daily to language arts instructional and practice activities, the major emphasis being on reading. Later-elementary teachers tend to devote between 5 to 7 hours weekly to reading, including the time pupils spend using the library and reading independently in classrooms for personal, recreational purposes.

Oral reading tends to receive considerable attention at all grade levels. Pupils in first grade engage in oral reading, on the average, once to twice daily. By the later elementary grades, many teachers occasionally still plan rather extensive use of oral reading on a weekly basis. It would seem that many of the teachers use performance in oral reading as an index of mastery of phonic analysis skills.

## INTELLIGENCE AND SCHOLASTIC ATTAINMENTS

Ypsilanti maintains a comprehensive program of testing its pupils. Group tests of intelligence are administered in grades 1, 3, 5, 7, and 10. The Ypsilanti Public Schools use

Lorge Thorndike Tests; Roosevelt Laboratory School, the California Mental Maturity Tests. Individual tests of intelligence are administered to pupils who pose special problems. Tests of reading achievement are administered yearly in grades 1 and 2. The Gates Reading Tests are used in both the public schools and Roosevelt Laboratory School. Broad-range achievement batteries are administered yearly beginning in grade 3. The Ypsilanti Public Schools use the Iowa Basic Skills Tests; Roosevelt Laboratory School, the Stanford Achievement Tests. In addition, a variety of personality, aptitude, and interest inventories and tests are administered during the secondary school years. Test results are readily available to teachers and counselors for the guidance and counseling of students.

Test results compiled by the Office of the Director of Testing show that the average performance of Ypsilanti children is consistently close to the expected means and median percentiles of national norms on the mental and achievement tests given as part of the basic testing program.

## SUMMARY

The pertinent facts about Ypsilanti as the source of the American samples may be summarized as follows:

1. Ypsilanti is located in the most densely populated section of Michigan.

2. The area in which Ypsilanti is situated is highly industrialized.

3. Manufacturing and white-collar occupations account for a substantial fraction of the employed working force in Ypsilanti.

4. The community has lower percentages of foreign born and native inhabitants, but higher percentages of migrant and nonwhite inhabitants than do the state and the nation.

5. The educational level of the community's citizens is higher than the state and the nation.

6. The educational system of Ypsilanti conforms generally to the pattern of organization typically found in Michigan and in many sections of the United States.

7. None of the schools included in this study had uncertificated teachers.

8. Ypsilanti has a highly favorable percentage of elementary teachers who have earned a bachelor's degree.

9. The pupil-teacher ratio in Ypsilanti is quite close to Michigan and national averages.

10. The percentage of high school drop-outs found in Ypsilanti is little different from the percentages for the state and the nation.

11. Practices in the teaching of reading are similar to practices reported around Michigan and the United States as a whole.

12. Instruction in phonics is introduced gradually as part of an eclectic approach to beginning reading.

13. Oral reading is stressed during the early school years.

14. The basal readers used in Ypsilanti are the same as those found throughout Michigan and the nation.

15. The average mental and scholastic attainments of the children in this school population are within the normal range.

# CHAPTER III

# PROCEDURE

## Subjects

### SELECTION OF SAMPLES

West Lothian. The testing in West Lothian was conducted during February, 1962. At that time, the Primary III school population totaled 1,612 children. These Primary III pupils were enrolled in 31 primary schools. The investigators of the cooperative research project, with the assistance of the Depute Director of the West Lothian County Education Authority, selected eight of these 31 primary schools as representative of the total number of schools. These eight schools enrolled 321 Primary III pupils.

The eight primary schools included were chosen according to size, mean IQ of the promotion class of 1961, and incidence of uncertificated teachers (Anderson et al, 1964). Only schools corresponding to public schools in the United States were used as a source of subjects. Size was taken into account to ensure that the proper proportion of schools of each size would be represented. Since the 1961 Primary VII class had taken the Moray House Test of Verbal Reasoning as part of their transfer examination, the choice of schools was

made with the results of that test in mind to avoid a bias with respect to IQ. Since one primary school was judged to be atypical in the matter of the number of uncertificated teachers employed from time to time, that school was not among the eight primary schools selected.

The 50 children who were given Gray's Standardized Oral Reading Paragraphs Test were chosen as a systematic sample from the class lists composing the representative sample of 321 pupils. In effect, these lists were placed end-to-end, and the selection was made by taking every eighth boy and every eighth girl as their names appeared on the master list. This procedure was used in order to represent each participating school in the same proportion as each contributed to the total sample, as well as to balance the sexes. The initial count yielded a sample of 43 pupils. Seven additional names were drawn at random to assure a final sample of 50. The discovery of the partial obliteration of one child's oral record has since reduced the usable sample to 49 (Anderson et al, 1964).

Ypsilanti. The testing in Ypsilanti was conducted during January and February, 1964. At that time, the second and third grade school populations included in this study numbered 616 and 605 children, respectively. These pupils were enrolled in 12 schools. Within these 12 units, there were a total of 24 second grade classrooms and 22 third grade classrooms. All of these classrooms were included in the

respective grade samplings in order to ensure that the samples reflected the total community as nearly as possible.

Samples of these second and third grade American populations were constructed in a ratio of two Ypsilanti children for each usable West Lothian child. Hence, each American sample contained 98 children. The Ypsilanti pupils were selected by using tables of random numbers (Edwards, 1946; Lindquist, 1953; Senders, 1958) to locate classrooms and pupils within classrooms. The random numbers were used in sets of four numbers each. The first two numbers in each set were used to identify a classroom within a grade. For each grade, classrooms were assigned code numbers drawn by lot. The last two numbers in each set were used to identify a pupil within that classroom as his name appeared alphabetically on the official enrollment list for the classroom. The random selection continued until the specific numbers of children needed in each age-sex category were obtained.

Examination of the age data for the Ypsilanti populations quickly revealed that there would be no difficulty in finding twice as many second grade girls of the same ages as the West Lothian girls and twice as many third grade girls 12 months older than the West Lothian girls. At the same time, it became apparent that it would be difficult to find any second grade boys of the same age (85 months) as the youngest boy in the West Lothian sample. It was also clear that it would be impossible to find any third grade boys 12 months

older than that youngest West Lothian boy. The investigator therefore revised somewhat the specific numbers of Ypsilanti second and third grade boys needed at the particular ages for age-matching purposes. This involved using some boys at slightly older ages while maintaining the appropriate mean age and age variance, and the ratio of two Ypsilanti boys for each West Lothian boy.[1]

## CHARACTERISTICS OF THE SAMPLES

Size. The sizes of the samples in relation to the school populations from which they were drawn are indicated in Table 2. The total West Lothian Primary III school enrollment was used here so that the percentages would be comparable in meaning.

TABLE 2

SIZES OF SAMPLES IN RELATION TO POPULATIONS FROM WHICH THEY WERE DRAWN

| Group | Population Size | Sample Size | Percent |
|---|---|---|---|
| W. Loth. | 1,612 | 49 | 3.04 |
| Ypsi. 2 | 616 | 98 | 15.91 |
| Ypsi. 3 | 605 | 98 | 16.20 |

Distribution by sex. The samples were reasonably well balanced according to sex. Table 3 shows that the division

[1]Frequency distributions of the ages, by sex, in the samples are presented in Table 31 in Appendix A.

did not vary significantly from an even split (Dixon and Massey, 1957, p. 99). Throughout this work, asterisks are used to denote level of significance of differences. A single asterisk identifies a difference which is significant at the 5% level; a double asterisk, a difference which is significant at the 1% level. The absence of an asterisk means that the required level of significance has not been reached.

TABLE 3

COMPARISON OF SEX DISTRIBUTIONS WITHIN SAMPLES

| Sample | Boys | | Girls | | z |
|---|---|---|---|---|---|
| | No. | Percent | No. | Percent | |
| W. Loth. | 23 | 46.94 | 26 | 53.06 | .43 |
| Ypsi. 2 | 46 | 46.94 | 52 | 53.06 | .61 |
| Ypsi. 3 | 46 | 46.94 | 52 | 53.06 | .61 |

Ages. The mean ages and the age variances of the three samples at the times of their testing are presented in Table 4. These mean ages are always reported in months.

Comparisons of the mean ages of the populations and their samples are shown in Table 5. Since the average age of all West Lothian Primary III pupils was not known, the mean age of the representative sample of 321 West Lothian Primary III pupils was used for this comparison. The differences in mean age are not significant (Dixon and Massey, 1957, pp. 115-116).

TABLE 4

MEAN AGES AND AGE VARIANCES OF THE SAMPLES

| Sample | No. | Mean Age | s |
|---|---|---|---|
| W. Loth. | 49 | 90.86 | 3.32 |
| Ypsi. 2 | 98 | 90.94 | 3.25 |
| Ypsi. 3 | 98 | 102.94 | 3.22 |

TABLE 5

COMPARISON OF MEAN AGES OF POPULATIONS AND SAMPLES

| Group | Population | | Sample | | | Difference | df | t |
|---|---|---|---|---|---|---|---|---|
| | No. | Mean | No. | Mean | s | | | |
| W. Loth. | 321 | 91.13 | 49 | 90.86 | 3.32 | .27 | 48 | 0.57 |
| Ypsi. 2 | 616 | 90.37 | 98 | 90.94 | 3.25 | -.57 | 97 | -1.68 |
| Ypsi. 3 | 605 | 102.61 | 98 | 102.94 | 3.22 | -.33 | 97 | -0.97 |

Table 6 shows comparisons of the mean age and age variance of the West Lothian sample with the mean ages and age variances of the Ypsilanti samples.[1] Note that there is practically no difference between the mean ages of the West Lothian and the Ypsilanti second grade samples. This is as planned. Note also that the mean age of the Ypsilanti third grade sample is almost exactly 12 months above that of the

[1]Comparison of ages by sex, between and within samples, are shown in Tables 32 and 33 in Appendix A. Only planned differences were obtained.

West Lothian sample. This again is as planned. Hence, years of instruction rather than age will be a variable when the West Lothian and Ypsilanti second grade samples are compared, whereas age rather than years of instruction will be a variable when the West Lothian and Ypsilanti third grade samples are compared. When no specific statistical references are cited, the comparisons reported throughout this work may be understood to have been performed through the use of the computer programs and facilities of the University of Michigan Computing Center. Only two-tailed tests of significance have been employed.

TABLE 6

COMPARISONS OF THE MEAN AGE AND AGE VARIANCE OF THE WEST LOTHIAN SAMPLE WITH THE MEAN AGES AND AGE VARIANCES OF THE YPSILANTI SAMPLES

| Sample | No. | Mean | s | Difference | t | F |
|---|---|---|---|---|---|---|
| W. Loth. | 49 | 90.86 | 3.32 | .08 | -00.14 | 1.04 |
| Ypsi. 2 | 98 | 90.94 | 3.25 | | | |
| W. Loth | 49 | 90.86 | 3.32 | 12.08 | -21.22** | 1.07 |
| Ypsi. 3 | 98 | 102.94 | 3.22 | | | |

IQ. Since mental tests are not administered to primary III children in West Lothian, no mental test scores are available for this sample. However, county records indicate that there is little variation in the mean IQs of primary school

promotion classes from year to year. It seems safe, therefore, to assume that the mean IQ of the Primary III class in any school will not differ significantly from that of the Primary VII class in the same school (Anderson et al, 1964). The evidence cited previously in Chapter II of this work regarding the intelligence of Primary VII children supports the view that West Lothian children may be safely assumed to be a normal group on the variable of intelligence. As was noted earlier, a systematic sampling procedure was used to select the 50 children who were given Gray's test. While systematic sampling (taking every nth child) does not exactly satisfy the conditions of random sampling, it does assure the equivalent of a random sample when the population has been catalogued in alphabetical order (McNemar, 1962, pp. 382-3; Guilford, 1965, p. 139). Since the West Lothian class lists were arranged alphabetically, there would seem to be only a slight chance that this sample would differ significantly from the population on the variable of intelligence.

Mental tests are administered regularly in the Ypsilanti schools involved in this investigation. Since Roosevelt School uses the California Mental Maturity Test, the investigator administered the Lorge Thorndike Intelligence Test to that school's second and third grade classes during January, 1964, so that they could be included in the study populations. Table 7 presents comparisons of the mean IQs of the two Ypsilanti samples with Lorge Thorndike norms

(Dixon and Massey, 1957, p. 112).[1] The differences were not statistically significant.

TABLE 7

COMPARISONS OF MEAN IQS OF YPSILANTI SAMPLES WITH LORGE THORNDIKE NORMS

| Group | Sample | | Norm | | Difference | z |
|---|---|---|---|---|---|---|
| | No. | Mean | μ | sd | | |
| Ypsi. 2 | 98 | 101.38 | 100 | 16 | 1.38 | .85 |
| Ypsi. 3 | 98 | 100.38 | 100 | 16 | .38 | .24 |

The information on West Lothian intelligence and the comparisons of intelligence for the Ypsilanti samples would seem to permit the investigator to "rule out" intelligence as a variable when comparing the samples on oral reading variables.

## Testing the Subjects

### TEST INSTRUMENT

Description. The oral reading proficiency of the samples was measured by The Gray Standardized Oral Reading Paragraphs Test, 1955 Edition. This individual instrument consists of 12 paragraphs which are graduated in difficulty.[2]

[1] Comparisons of the IQs of boys with the IQs of girls within the Ypsilanti samples are presented in Table 34 in Appendix A. No significant differences were obtained.

[2] The paragraphs are shown in Appendix B.

A child starts with the first paragraph and continues reading until he has made seven or more errors on each of two consecutive paragraphs. Each paragraph is timed and scored separately, so a combination of rate and accuracy are co-determinants of paragraph score. The total score on Gray's test is the sum of the scores earned on each paragraph. A pupil may earn a score of 1 to 4 points on any paragraph. This score is determined by the number of errors committed within five prescribed time intervals expressed in seconds. There is no ceiling on the time allowed to read any paragraph. A child who takes 40 seconds, or longer, earns no score if he makes more than four errors. On the other hand, a child who reads a paragraph in less than 40 seconds may make six errors and still earn a score of 1. At the other extreme, a child who misses no word or only one word always earns a score of 4, time notwithstanding. A child who misses two words must use less than 20 seconds to earn a score of 4; otherwise, he gets a score of 3. Thus, high word accuracy always produces a high score, while relatively rapid times can compensate somewhat for an extra error or two committed during the faster reading of a paragraph. Hence, Gray's test places a premium on accuracy, but nevertheless may give some credit for a very fast rate.

Cultural factor. Since the investigator could not find any comparative study of the cultural loading on Gray's test, he turned to four alternative sources: prima facie

evidence, scholarly opinion, lexical analysis, and post hoc evidence.

Prima facie evidence in this instance is the matter of the familiarity of the themes and topics of the 12 paragraphs. On the face of it, the content of the paragraphs should be equally familiar to British and American children.[1] The investigator finds nothing in these paragraphs which might give an advantage to either group.

While scholars enjoy pointing out the differences between Received Standard English (The Queen's English) and American English in matters of pronunciation and vocabulary meanings, those same scholars are equally quick to point out essential similarities in sounds, words, word meanings, and syntax. Albert H. Marckwardt (1958) judges the differences in essential operational machinery of the two forms of English to be quite negligible. It should also be noted here that the cooperating Scottish educators accepted Gray's test without misgivings about its fairness.

Since the question of word meanings bears legitimately upon the matter of cultural loading, the investigator performed a lexical analysis of the 12 paragraphs. Every fifth running word was systematically selected, except when repetitions occurred. In the case of repetitions, the next sequentially different word was chosen. Then, the obtained sample of

---

[1]The paragraphs are shown in Appendix B.

124 different words was checked for meaning congruency using a British dictionary, The Oxford Universal Dictionary, Third Edition (Little et al, 1955). In only one instance did the investigator find any disparity. It occurred in the usage of the word round in the sentence, "So the little pig ran round and round the pen," which appears at the end of the second paragraph. The Oxford Universal Dictionary records this prepositional use of the word round to be quite proper usage, but alien to American speech. That authority cites the word around as being the more commonly used word in American speech, but rather alien to British speech. It would appear that the Scottish children have a slight advantage in this matter.

Of the many different words missed by children in the samples, only one word stood out as being missed more often by one sample than by another. That word was round, as cited above. Since an examination of this matter bears on more than the cultural factor, the specific findings and discussion in this regard are presented in the next chapter. For the moment, let it suffice that significantly more American than Scottish children substituted around for round.

On the basis of the available opinion and evidence, it would seem rather safe to operate on the assumption that Gray's test contains very little cultural bias favoring one sample over another. Since the samples in this study are regional rather than national, it is possible that dialectical

differences may have worked to the disadvantage of some children. There is no evidence, however, that such a disadvantage was, or might have been, major in scope. The investigator attempted to make every reasonable allowance for dialectical variations in the pronunciations of words.

## TEST ADMINISTRATION

The West Lothian sample was tested during the period February 2 to 23, 1962. The tests were administered during morning or afternoon hours, whichever better suited the schedule of the individual school. Substitutions were made for children absent on the test day by taking the next name on the master list. The same investigator handled all oral reading testing. These tests were conducted in facilities suitable for the purpose provided by the headteachers. The children's oral reading was tape recorded to obtain permanent records which could be scored later, eliminating the need to keep times and check errors during the test. The usual precautions were taken to establish rapport with the children. Each child was permitted to hear his own voice after finishing the test. In general, the children were highly motivated and regarded the test as something special (Anderson et al, 1964).

The Ypsilanti second grade sample was tested during the period January 23 to February 5, 1964. The third grade sample was tested during the period February 6 to 25, 1964.

Testing was conducted during morning and afternoon hours. Dates were selected to suit the schedules of the individual schools. Building principals provided facilities suitable for the testing. Substitutions were made for children absent on the testing dates by again randomly selecting from the total grade population until an appropriate individual was located. The children's oral reading was tape recorded; no mechanics of scoring were performed during the testing. Each child was told that the investigator wanted to find out what kinds of stories children really like. After each child had read some paragraphs until the required number of errors had been made, the child was invited to tell which stories he did and did not like. No child was pressed to explain his preferences. Children who expressed a desire to hear their own voices were allowed to do so. By and large, the reaction of the children was that it was fun to take the test.

# CHAPTER IV

## RESULTS

This chapter is addressed to the results. Six sets of comparisons are presented as follows:

1. Comparison of the mean scores of the samples with the test norms.
2. Comparison of West Lothian test scores with Ypsilanti test scores.
3. Comparison of West Lothian oral reading rates with Ypsilanti oral reading rates.
4. Comparison of West Lothian oral reading accuracy with Ypsilanti oral reading accuracy.
5. Comparison of West Lothian and Ypsilanti samples with respect to types of oral reading errors.
6. Comparison of West Lothian and Ypsilanti samples with respect to tendency to read for meaning, as indicated by word substitutions which change meaning and by the self-correction of these errors.

The rationale of these comparisons was developed in Chapter I as a part of the introduction. Hence, it will not be repeated here.

### Comparison of Mean Scores with Test Norms

The first step in the analysis of the results was to compare the mean score of the West Lothian sample with the test norms on Gray's Oral Reading Test. The norm for American

children of the same age was obtained from a table of age equivalents. This procedure required interpolation to arrive at a norm precisely adjusted to the mean age of the sample. This interpolated score may be regarded as the average score which "normal" groups of American children of the same age as the West Lothian sample could be expected to achieve.

Scottish children of the same age as American children have typically received 1 more year of instruction in school. Therefore, the mean score of the West Lothian sample was also compared with the norm on Gray's test for American children 1 year older. Such a comparison tends to equalize the years of formal schooling, but gives American children the benefit of an additional year of maturity. It is felt that such a comparison might shed light on the relationship between extent of schooling and degree of maturity.

In addition, the mean scores of the Ypsilanti samples on Gray's Oral Reading Test were compared with the test norms for pupils of the same ages to obtain evidence on the quality of these samples, since they are to be compared with the West Lothian sample in subsequent sections of this report.

The standard deviation of the population on which the norms for Gray's Oral Reading Test were based was unknown. Therefore, for all of the comparisons, a formula was used which permitted application of the $t$ statistic through the use of sample variance (Dixon and Massey, 1957, pp. 115-116).

WEST LOTHIAN COMPARISONS

Comparison of West Lothian sample with the test norm at the same age as the sample. The mean score of the Scottish sample is compared with the test norm for American children of the same age in Table 8. The sample mean is significantly above the norm.

TABLE 8

COMPARISON OF WEST LOTHIAN SAMPLE WITH AMERICAN NORM ON GRAY'S ORAL READING TEST

| Sample | | | | | | |
|---|---|---|---|---|---|---|
| No. | Mean | s | Norm | Difference | df | t |
| 49 | 14.29 | 7.13 | 8.5 | 5.79 | 48 | 5.68** |

The difference amounts to approximately 0.9 of a grade. This advantage matches closely the additional year of schooling West Lothian pupils gain by starting their primary education at age 5 rather than 6.

Comparison of West Lothian sample with the test norm at 12 months above the mean age of the sample. Table 9 shows the comparison of the West Lothian mean score with the American norm on Gray's test at a year above the mean age of the sample. This comparison erases the difference in favor of the West Lothian sample.

TABLE 9

COMPARISON OF WEST LOTHIAN SAMPLE WITH AMERICAN NORM ON GRAY'S ORAL READING TEST AT 12 MONTHS ABOVE THE MEAN AGE OF THE SAMPLE

| Sample | | | | | | |
|---|---|---|---|---|---|---|
| No. | Mean | s | Norm | Difference | df | t |
| 49 | 14.29 | 7.13 | 15.0 | -0.71 | 48 | .70 |

Once again, the findings seem to be related to the number of years of instruction the children have had.

In summary, the West Lothian mean score is significantly above the norm for American children of the same age, but comparable to the norm for American children 12 months older. Hence, the quality of oral reading of this sample appears to reflect the additional year of schooling which West Lothian pupils gain by starting their primary education at age 5 rather than 6. This seems to call attention to the importance of instruction, as contrasted with maturity.

YPSILANTI COMPARISONS

Comparison of Ypsilanti second grade sample with the test norm at the same age as the sample. The comparison of the mean score of the Ypsilanti second graders with Gray's test norm for American children of the same age is presented in Table 10. The sample mean is significantly below the norm, although the difference is small. It is equivalent to only

about 0.3 of a grade.

TABLE 10

COMPARISON OF YPSILANTI SECOND GRADE SAMPLE WITH AMERICAN NORM ON GRAY'S ORAL READING TEST

| Sample | | | | | | |
|---|---|---|---|---|---|---|
| No. | Mean | s | Norm | Difference | df | t |
| 98 | 7.03 | 6.48 | 8.5 | -1.47 | 97 | 2.24* |

Comparison of the Ypsilanti third grade sample with the test norm at the same age as the sample. Table 11 shows the comparison of the mean score of the Ypsilanti third graders with the norm on Gray's Oral Reading Test for American children of the same age. The difference is significant but small. The difference is again equivalent to only about 0.3 of a grade below the norm.

TABLE 11

COMPARISON OF YPSILANTI THIRD GRADE SAMPLE WITH AMERICAN NORM ON GRAY'S ORAL READING TEST

| Sample | | | | | | |
|---|---|---|---|---|---|---|
| No. | Mean | s | Norm | Difference | df | t |
| 98 | 13.49 | 6.72 | 15.0 | -1.51 | 97 | 2.22* |

The Ypsilanti samples were not superior samples with respect to their ability to read orally. If anything, they may have been less than average in oral reading competency according to Gray's norms.

## Comparison of Test Scores

This section compares the scores of the West Lothian sample with the scores of the Ypsilanti samples. The availability of individual scores for an American sample permits comparison of variances as well as comparison of mean scores.

Comparisons of the West Lothian mean score with the Ypsilanti mean scores are shown in Table 12. The mean score of the West Lothian sample is significantly above that of the Ypsilanti second grade sample, but comparable to the mean score of the third grade sample. The extent of instruction seems to be the predominant factor in these results, especially since the additional year of maturity apparently did not give the Ypsilanti third grade sample an advantage, even though extent of instruction tended to be equalized in the comparison of the West Lothian sample with the Ypsilanti third grade sample.

TABLE 12

COMPARISONS OF THE MEAN SCORE AND VARIANCE OF THE WEST LOTHIAN SAMPLE WITH MEAN SCORES AND VARIANCES OF THE YPSILANTI SAMPLES

| Sample | No. | Mean Score | s | Difference | t | F |
|---|---|---|---|---|---|---|
| W. Loth | 49 | 14.29 | 7.13 | 7.26 | 6.26** | 1.21 |
| Ypsi. 2 | 98 | 7.02 | 6.48 | | | |
| W. Loth | 49 | 14.29 | 7.13 | .80 | .69 | 1.13 |
| Ypsi. 3 | 98 | 13.49 | 6.72 | | | |

The second section of Table 12 presents the comparisons of variances. The West Lothian sample was slightly more variable than either Ypsilanti sample, but the differences were not significant.

The distribution of scores, as shown in Table 13, illustrates the nature of the variability. Except for one case, the Ypsilanti second grade distribution does not run as high as the West Lothian distribution. The Ypsilanti third grade and the West Lothian distributions are more comparable in range. Especially noticeable is the large number of Ypsilanti second grade pupils who fall within the lowest score interval. Most of these children earned no score at all on Gray's test. The presence of these cases led to a comparison of the percentages of zero-achievers found in each sample.

Comparisons of the percentage of zero-achievers in the West Lothian sample with the percentages of zero-achievers in the Ypsilanti samples are presented in Table 14. The Scottish sample had a significantly smaller percentage of children who earned no score on Gray's test than did the American second grade sample. The Scottish and American third grade samples were identical. It is noteworthy that the frequency with which serious reading problems occur in these samples is similar after the Ypsilanti children have had a comparable amount of instruction. The incidence of zero-achievers seems to vary with extent of instruction.

TABLE 13

DISTRIBUTION OF SCORES OF WEST LOTHIAN AND YPSILANTI SAMPLES

| Scores | Samples | | |
|---|---|---|---|
| | West Lothian | Ypsilanti 2 | Ypsilanti 3 |
| 34-35 | | 1 | |
| 32-33 | | | |
| 30-31 | | | |
| 28-29 | | | 1 |
| 26-27 | 2 | | 2 |
| 24-25 | 2 | | 5 |
| 22-23 | 8 | 2 | 5 |
| 20-21 | 1 | | 9 |
| 18-19 | 4 | 3 | 5 |
| 16-17 | 5 | 2 | 13 |
| 14-15 | 4 | 5 | 11 |
| 12-13 | 5 | 11 | 8 |
| 10-11 | 7 | 9 | 14 |
| 8- 9 | 3 | 9 | 4 |
| 6- 7 | 1 | 14 | 9 |
| 4- 5 | 2 | 8 | 3 |
| 2- 3 | 2 | 8 | 4 |
| 0- 1 | 3 | 26 | 5 |
| Totals | 49 | 98 | 98 |

TABLE 14

COMPARISON OF PERCENTAGE OF ZERO-ACHIEVERS IN WEST LOTHIAN SAMPLE WITH PERCENTAGES OF ZERO-ACHIEVERS IN YPSILANTI SAMPLES

| Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth. | 2/49 | 4.08 | -17.35 | 6.192* |
| Ypsi. 2 | 21/98 | 21.43 | | |
| W. Loth. | 2/49 | 4.08 | .00 | .000 |
| Ypsi. 3 | 4/98 | 4.08 | | |

This concludes the comparison of test scores. However, these test scores can be broken down into rate and accuracy scores. It thus becomes possible to compare the samples separately on rate and accuracy. We turn next to these comparisons, beginning with a comparison of the oral reading rates of the samples.

## Comparison of Oral Reading Rates

Since test scores are the product of time in seconds in relation to total number of errors committed, test scores can be analyzed into two component variables, rate and accuracy, as was indicated at the end of the last section.

Time in seconds is not a direct measure of speed or rate. Likewise, total number of errors is not a direct measure of oral reading accuracy. Rather, time in seconds

must be related to total running words read in order to obtain a sensible measure of rate. In like fashion, total number of errors must be related to total running words read in order to obtain a meaningful measure of oral reading accuracy. This section and the following section report on comparisons of oral reading rate and accuracy, respectively.

The directions for Gray's Oral Reading Test specify that pupils are to continue to read until they have made seven or more errors on two successive paragraphs. Some children earned no score on any paragraph. The other children performed with varying degrees of proficiency on the paragraphs on which they earned no score. Pupil performance on all of these "no-score" paragraphs was characterized by a need for considerable assistance from examiners. Hence, it makes no sense to include such paragraphs in a determination of rate. After all, if a child's rate is to be meaningful, that rate should most nearly reflect the child's own speed of mental processing. Therefore, the comparisons on rate of oral reading are limited to those children who scored at least one point on Gray's test. (Such children are hereafter referred to, collectively, as the "scoring-sample.") Furthermore, only those paragraphs on which at least one point was earned were included in the analysis.

The first step in the computation of a child's rate was to multiply his total running words scored on by 60. Then, that product was divided by his cumulative time in

seconds for those running words scored on. This procedure rendered a measure of rate in words per minute.

The comparison of the mean rate of the West Lothian scoring-sample with the mean rates of the Ypsilanti scoring-samples is presented in Table 15. The Scottish children are comparable to the American second graders, but significantly slower than the American third graders. This set of findings seems to be related to the type of instructional approach used with these West Lothian children. This is to say, such findings could follow from an approach which emphasizes details.

TABLE 15

COMPARISON OF RATES OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Mean W.P.M. | s | Difference | t | F |
|---|---|---|---|---|---|---|
| W. Loth. | 47 | 86.70 | 31.90 | 8.58 | 1.63 | 1.50 |
| Ypsi. 2 | 77 | 78.12 | 26.02 | | | |
| W. Loth. | 47 | 86.70 | 31.90 | -14.06 | 2.59* | 1.16 |
| Ypsi. 3 | 94 | 100.76 | 29.66 | | | |

Comparisons of variances of the groups are shown in the second section of Table 15. The variance ratios are not significant.

The distribution of rates, as shown in Table 16, illustrates the nature of the variability. It is evident from the

overlap that no large differences exist.

TABLE 16

DISTRIBUTION OF RATES OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Words per Minute | Scoring-Samples | | |
|---|---|---|---|
| | West Lothian | Ypsilanti 2 | Ypsilanti 3 |
| 160-163 | | 1 | 1 |
| 150-159 | | 1 | 4 |
| 140-149 | 3 | | 6 |
| 130-139 | 2 | 2 | 5 |
| 120-129 | 4 | 2 | 12 |
| 110-119 | 3 | 2 | 8 |
| 100-109 | 3 | 3 | 14 |
| 90- 99 | 7 | 7 | 8 |
| 80- 89 | 7 | 16 | 10 |
| 70- 79 | 3 | 11 | 10 |
| 60- 69 | 2 | 11 | 6 |
| 50- 59 | 5 | 11 | 8 |
| 40- 49 | 5 | 8 | 2 |
| 36- 39 | 3 | 2 | |
| Totals | 47 | 77 | 94 |

These findings suggest that the methods of teaching reading employed with West Lothian children tend to impede rate of oral reading. Since accuracy is the other factor which enters into total score on Gray's test, the indication

is, therefore, that those methods do tend to produce highly accurate readers. Comparisons of oral reading accuracy are presented in the next section.

## Comparison of Oral Reading Accuracy

It was noted earlier that pupil performance on "no-score" paragraphs was characterized by considerable assistance from examiners. Each instance of assistance on a word can provide increased opportunity for a child to make greater and increasingly accurate use of the total contextual flow. Thus, as examiner assistance increases, confidence in the meaningfulness of an accuracy score decreases. Therefore, these comparisons were also limited to the paragraphs on which a score of one or more points was earned. As before, this procedure eliminated from consideration those pupils who earned a zero score on the test.

Each pupil's oral reading accuracy score was computed by dividing his total number of running words scored on by his total number of errors committed during the reading of those running words. For example, one child made seven errors on 223 running words. Hence, his accuracy score was 30. This means that he made about one error for each 30 running words on which he earned a score.

The distribution of accuracy scores for all scoring-samples appeared to be quite skewed.[1] The West Lothian and

[1] See Appendix C.

Ypsilanti second grade distributions, shown in Table 17, especially reflect this skewness.

In view of the large number of accuracy scores and the dispersion of these accuracy scores, the median test was selected for checking differences in central tendency (Senders, 1958, p. 441). For each comparison, the relevant groups were combined into a single distribution, and the median score for that single distribution was determined. Then, the cases from each sample which were above and not above that median score were identified. A chi-square test of independence was then computed in the usual manner for a four-celled table (Senders, 1958, p. 436). Chi-square is a test of the relationship between rows and columns on a contingency table. A significant chi-square is equivalent to a significant difference between percentages.

Table 18 presents the comparisons of the West Lothian scoring-sample with the Ypsilanti scoring-samples. The Scottish group was significantly superior to the American second graders, but comparable to the American third graders. These findings are consistent with the previously introduced findings from comparisons of total scores and reflect the emphasis which Gray's test places upon accuracy, as opposed to speed. The findings suggest that the emphasis on phonics received by the West Lothian children tends to produce accurate rather than rapid readers.

TABLE 17

DISTRIBUTION OF ACCURACY SCORES OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Accuracy Scores | Scoring-Samples | | |
|---|---|---|---|
| | West Lothian | Ypsilanti 2 | Ypsilanti 3 |
| 100-104 | | 1 | |
| 95- 99 | 1 | 2 | |
| 90- 94 | | | |
| 85- 89 | 1 | | |
| 80- 84 | | 1 | |
| 75- 79 | 1 | | |
| 70- 74 | | | |
| 65- 69 | 4 | 1 | 6 |
| 60- 64 | | | |
| 55- 59 | 1 | | 1 |
| 50- 54 | 2 | 2 | 4 |
| 45- 49 | 4 | 4 | 7 |
| 40- 44 | 5 | 7 | 6 |
| 35- 39 | 5 | 7 | 11 |
| 30- 34 | 6 | 7 | 12 |
| 25- 29 | 4 | 8 | 13 |
| 20- 24 | 5 | 14 | 21 |
| 15- 19 | 5 | 15 | 9 |
| 10- 14 | 3 | 8 | 4 |
| Totals | 47 | 77 | 94 |
| Median Scores | 35 | 26 | 29 |

TABLE 18

COMPARISON OF PERCENTAGE OF ACCURACY SCORES ABOVE MEDIAN OF WEST LOTHIAN SCORING-SAMPLE WITH PERCENTAGE OF ACCURACY SCORES ABOVE MEDIAN OF YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Median Score | Percentage Above Median | Difference | Chi Square |
|---|---|---|---|---|---|
| W. Loth | 30/47 | 29.5 | 63.83 | 22.27 | 4.934* |
| Ypsi. 2 | 32/77 | | 41.56 | | |
| W. Loth | 30/47 | 30.0 | 55.32 | 12.77 | 1.570 |
| Ypsi. 3 | 40/94 | | 42.55 | | |

The West Lothian children have been found to be highly accurate but comparatively slower readers. On the other hand, the Ypsilanti children have been found to be fluent but relatively less accurate readers. These findings would follow logically from a phonics emphasis on the one hand and a sight-recognition emphasis on the other.

Inaccuracy is the complement of accuracy. Inaccuracy may be broken down into a number of different types of errors. The next section will compare the scoring-samples on each type of error. It is felt that these additional comparisons may shed further light on the effect of the differences in practice which are being investigated.

## Comparison of Oral Reading Errors

These comparisons are also limited to the paragraphs on which children scored one point or more. Since Ypsilanti

pupils committed more errors than did West Lothian children, comparisons of sheer numbers of errors would not reveal relative tendency to commit particular types of errors. Hence, these comparisons are based upon percentage of occurrence among all errors committed, so as to show any differences in tendency to make certain errors. Comparisons are presented in the following order: substitutions, mispronunciations, omissions, repetitions, insertions, reversals, and words aided. Significant skewness[1] of distributions necessitated use of the chi-square statistic with one degree of freedom throughout this section. Chi-square is a test of the relationship between rows and columns on a contingency table. A significant chi-square is equivalent to a significant difference between percentages. The distributions of these errors are presented in Appendix D.

## SUBSTITUTIONS

Whenever a child said a different word than the word on the page, the error was counted as a substitution. Comparisons of percentages of substitutions in relation to total errors are presented in Table 19. In each comparison, a significantly larger percentage of the total errors of Ypsilanti children were substitutions. Such a finding could follow from a reliance upon sight recognition, for in beginning reading instruction sight recognition methods tend to minimize the use of letter-sound clues and to maximize the

---

[1]See Appendix C

use of word form, picture, and context clues -- and encourage guessing. The importance of this finding also depends upon the degree to which the substitutions influence literal understanding.

TABLE 19

COMPARISONS OF PERCENTAGES OF SUBSTITUTIONS IN RELATION TO TOTAL UNCORRECTED ERRORS OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 136/362 | 37.58 | -10.45 | 8.532** |
| Ypsi. 2 | 218/454 | 48.03 | | |
| W. Loth | 136/362 | 37.58 | - 8.80 | 7.588** |
| Ypsi. 3 | 384/828 | 46.38 | | |

Substitutions of around for round, as noted previously in Chapter III, demonstrate an interesting cultural effect. The prepositional use of the word round is common in British English but more nearly alien to American English. The preferred word in American English for prepositional usage is around. Table 20 shows the comparisons of percentages of of substitutions of around for round. The Ypsilanti children had significantly larger percentages of such substitutions than did the West Lothian children. This tendency of the Ypsilanti pupils to substitute around for round may illustrate that small differences between spoken and written words tend to be resolved in favor of the prevalent spoken dialect.

This finding could also stem from an educational treatment which places relatively less emphasis upon careful attention to individual words.

TABLE 20

COMPARISONS OF PERCENTAGES OF SUBSTITUTIONS OF AROUND FOR ROUND OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 3/45 | 6.67 | -56.71 | 35.709** |
| Ypsi. 2 | 45/71 | 63.38 | | |
| W. Loth | 3/45 | 6.67 | -51.57 | 30.972** |
| Ypsi. 3 | 53/91 | 58.24 | | |

MISPRONUNCIATIONS

Whenever the serial order of phonemes spoken by a child corresponded to no known word in the English language, that utterance was categorized as a mispronunciation. The following are some examples of mispronunciations: "imbrast" for embraced, "mopul" for maple, "twil-lit" for twilight, and "buz'e'nes" for business.

The comparisons of percentages of mispronunciations are presented in Table 21. The West Lothian children had significantly larger percentages of such errors than did either Ypsilanti group. This finding could follow from a greater stress on the application of phonics to word recognition. The problem with reliance upon phonics is the

variability and inconsistency of English orthography, syllabication, and syllabic stress. Hence, if a child attacks a word only by sounding it out, he may or may not produce the accepted pronunciation.

TABLE 21

COMPARISONS OF PERCENTAGES OF MISPRONUNCIATIONS IN RELATION TO TOTAL UNCORRECTED ERRORS OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 90/362 | 24.86 | 17.15 | 44.367** |
| Ypsi. 2 | 35/454 | 7.71 | | |
| W. Loth | 90/362 | 24.86 | 12.18 | 26.394** |
| Ypsi. 3 | 105/828 | 12.68 | | |

OMISSIONS

This classification includes whole words skipped during the reading.

Table 22 compares the percentages of omissions. The Scottish children had a significantly higher percentage of omissions than the American second graders. The American third graders had a higher percentage of omissions than the Scottish pupils, but the difference was not significant.

TABLE 22

COMPARISONS OF PERCENTAGES OF OMISSIONS IN RELATION TO TOTAL UNCORRECTED ERRORS OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 31/362 | 8.56 | 4.82 | 7.600** |
| Ypsi. 2 | 17/454 | 3.74 | | |
| W. Loth | 31/362 | 8.56 | -4.00 | 3.613 |
| Ypsi. 3 | 104/828 | 12.56 | | |

REPETITIONS

Test directions stipulate that each occurrence of the repetition of two or more consecutive words is to be counted as an error. Repetitions of single words are not to be counted as errors. Both examiners interpreted the test directions on repetitions to be applied only when no self-correction was involved.

Comparisons of percentages of repetitions are shown in Table 23. The West Lothian children had a significantly higher percentage of repetitions than the Ypsilanti second graders, but the percentages for the West Lothian pupils and the Ypsilanti third graders did not differ significantly.

TABLE 23

COMPARISONS OF PERCENTAGES OF REPETITIONS IN RELATION TO TOTAL UNCORRECTED ERRORS OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 31/362 | 8.56 | 4.16 | 5.255* |
| Ypsi. 2 | 20/454 | 4.40 | | |
| W. Loth | 31/362 | 8.56 | -.74 | .088 |
| Ypsi. 3 | 77/828 | 9.30 | | |

INSERTIONS

The addition of a word to the context is the type of error involved here. Table 24 shows that no significant difference in percentage of insertions was found between the scoring-samples compared.

TABLE 24

COMPARISONS OF PERCENTAGES OF INSERTIONS IN RELATION TO TOTAL UNCORRECTED ERRORS OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 21/362 | 5.80 | 2.06 | 1.483 |
| Ypsi. 2 | 17/454 | 3.74 | | |
| W. Loth | 21/362 | 5.80 | -2.41 | 1.783 |
| Ypsi. 3 | 68/828 | 8.21 | | |

REVERSALS

Transpositions of total letter order and of word position in a sentence are included here. Reversal of letter order produces different words, as was for saw and on for no. Reversal of word order involves changing the position of one or more words within a sentence.

The comparisons of percentages of reversals are presented in Table 25. The differences are negligible and insignificant. In view of the considerable theoretical attention which is occasionally given to reversals, it is interesting to note the extremely small number of errors of reversal found in the oral reading of these samples.

TABLE 25

COMPARISONS OF PERCENTAGES OF REVERSALS IN RELATIONS TO TOTAL UNCORRECTED ERRORS OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 4/362 | 1.10 | .54 | .091 |
| Ypsi. 2 | 3/454 | .66 | | |
| W. Loth. | 4/362 | 1.10 | .01 | .003 |
| Ypsi. 3 | 9/828 | 1.09 | | |

Errors which may evidence a reversal tendency are also relevant here. Such partial reversals include confusion of

single letters, reversal of groups of letters, inversion of word form, and reactions to the last letter of a word. Single letter confusions include miscalling b as d or p, and p as q or d. Reading from for form and stop for spot are examples of the reversal of groups of letters. An example of a word-form inversion is saying pod for bog. Misreadings like went for saw, you for my, and girl for dog evidence reactions to the last letter of a word.

Comparisons of the percentages of partial reversals found among substitutions and mispronunciations are shown in Table 26. The differences in percentages are small and insignificant. These findings appear to echo the previous findings on total reversals.

TABLE 26

COMPARISONS OF PERCENTAGES OF PARTIAL REVERSALS TO TOTAL SUBSTITUTIONS AND MISPRONUNCIATIONS OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 17/226 | 7.52 | 3.17 | 1.661 |
| Ypsi. 2 | 11/253 | 4.35 | | |
| W. Loth | 17/226 | 7.52 | 1.39 | .286 |
| Ypsi. 3 | 30/489 | 6.13 | | |

WORDS AIDED

This classification covers several conditions. Test directions stipulate that examiners are to supply the pronunciation whenever a child hesitates for "several seconds." The examiner for the West Lothian sample and the examiner for the Ypsilanti samples applied uniform procedures. The pronunciation was supplied whenever a child either asked for help or paused and looked at the examiner, as if awaiting assistance. The pronunciation was also supplied whenever a pupil paused for about five seconds without any overt manifestation that he was sounding out the word.

Table 27 shows the comparisons of percentages of words aided. The West Lothian pupils had a significantly lower percentage of aided words than the Ypsilanti second grade pupils, but they were comparable to the Ypsilanti third graders.

TABLE 27

COMPARISONS OF PERCENTAGES OF WORDS AIDED IN RELATION TO TOTAL UNCORRECTED ERRORS OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 49/362 | 13.54 | -18.18 | 35.872** |
| Ypsi. 2 | 144/454 | 31.72 | | |
| W. Loth | 49/362 | 13.54 | 3.76 | 3.271 |
| Ypsi. 3 | 81/828 | 9.78 | | |

Comparisons of the errors of the West Lothian children with the errors of the Ypsilanti children have revealed several significant differences. The findings on substitutions suggest that the American pupils tend to rely more upon sight recognition than do the Scottish pupils. The findings on mispronunciations suggest that the Scottish pupils tend to rely more upon phonic analysis than do the American samples. The findings on words aided suggest that the West Lothian children develop greater independence, or self-confidence, in word recognition sooner than do the Ypsilanti children.

The findings on substitutions and words aided call attention to a weakness of the sight method of word recognition. The performance of the West Lothian scoring-sample on substitutions and words aided indicates that phonics tends to neutralize that weakness. The findings on mispronunciations call attention to a weakness of the phonic method of word recognition. The performance of the Ypsilanti scoring-samples on mispronunciations indicate that emphasis upon context clues tends to minimize that weakness. It would seem that each of these two educational systems may contribute something to an improvement of practices in the development of proficient oral reading.

It now remains to be determined whether or not the superior word pronunciation accuracy of the West Lothian pupils should be taken to be indicative of meaningful,

literal interpretation. Gray's test has no special provision for the measurement of comprehension. However, since some substitutions change story meaning while others do not, substitutions can be used as an index of understanding. The next section will compare uncorrected and self-corrected substitutions judged to change meaning. It is felt that these comparisons will get at tendency to read for meaning.

## Comparison of Tendency to Read for Meaning

Gray's Oral Reading Test does not provide for direct assessment of comprehension. The absence of a built-in index of understanding suggests three tacit assumptions. When a person reads aloud his native tongue: (1) the reader's correct pronunciations permit him to tap into his auditory memory; (2) relevant, stored language experience will be available; and (3) the reader will draw upon those needed data to produce some minimally satisfactory degree of literal interpretation. The second and third assumptions are not always warranted, for the development of phonic attack skills can precede the experience necessary for understanding (Spache, 1963, pp. 225-226). Thus, while sound is a basic mediator of meaning, the production of an acceptable pronunciation for a word does not guarantee association of relevant meaning with that word (Underwood and Schulz, 1960). Furthermore, the suprasegmental phonemes of pitch, stress, juncture, and sentence contour are learned entities (Francis, 1958).

Therefore, the oral reading may be "expressive" whether or not comprehension exists.

Since Gray's test does not provide for direct assessment of comprehension and since purely phonological evidence is of doubtful validity, the only remaining source of information on tendency to read for meaning is the corpus of errors. To be useful, any error category must be sufficiently large to afford comparisons. It must also be related more nearly to broad message flow -- i.e., accumulative conceptual probabilities -- than to tiny segments and nuances of message flow.

Reversals have low utility here because of their very infrequent occurrence. Insertions are not useful because of their limited incidence and because they may be merely thoughtless repetitions of the earlier occurrence of a word in similar phrase context. Since repetitions are really additions to context and are few in number, they also have low utility as an index of understanding. Omissions have variable significance in relation to amount of redundancy, so they pose many complex, unresolved problems (MacGinitie, 1960). Words aided are of dubious value because they are pronunciations supplied to the children by the examiners. Mispronunciations are distortions of accepted pronunciation. Distorted pronunciations may or may not continue to serve as mediators of relevant meaning. The effect of degree of distortion upon mediation of meaning has not as yet been

determined (Underwood and Schulz, 1960). Since mispronunciations pose complex, unresolved problems of interpretation, they are of questionable value here. This leaves only substitutions to be considered.

Substitutions are the largest category of errors. Furthermore, substitutions, by their very nature, readily lend themselves to two tests of understanding: (1) immediate association relevancy and (2) germaneness to the broader contextual flow and accumulation of ideas. While substitutions may not be the most direct basis for measurement, they are rather straight-forward indicators of whether or not a person is tending to grasp the gist of the on-going message (Bruner et al, 1956). They also seem particularly applicable to persons who are still learning the purely mechanical aspects of oral reading.

All self-corrected and uncorrected substitutions in the paragraphs on which some score was earned will be considered in the comparisons soon to follow.[1] These substitutions were viewed from three perspectives. First, the relationship between substitutions judged to change meaning and all substitutions was considered. This perspective describes total tendency to make substitutions which change meaning. Next, the relationship between uncorrected substitutions judged to change meaning and all uncorrected substitutions was examined. This perspective describes tendency to make substitutions which change meaning among all

[1]See Appendices E, F, and G.

substitutions which children did not self-correct. Finally, the relationship between self-corrected substitutions which change meaning and all substitutions which change meaning was examined. This perspective describes tendency to self-correct substitutions which change meaning, thus indicating alertness to change in meaning within the contextual flow.

## SUBSTITUTIONS WHICH CHANGE MEANING IN RELATION TO ALL SUBSTITUTIONS

The comparisons of percentages of substitutions which change meaning in relation to all substitutions are recorded in Table 28. The percentage of substitutions which change meaning of the West Lothian children is significantly larger than the percentage for either Ypsilanti group. Hence, when West Lothian pupils make a substitution, that substitution is more likely to change the meaning. This finding could follow from a practice which gives less attention to meaning in beginning reading instruction.

## SUBSTITUTIONS WHICH CHANGE MEANING AMONG ALL UNCORRECTED SUBSTITUTIONS

Table 29 presents the comparisons of percentages of substitutions which change meaning among all uncorrected substitutions. The percentage of substitutions which change meaning of the West Lothian group is again significantly larger than the percentage for either Ypsilanti group. Again, when West Lothian children make a substitution, that substitution is more likely to change the meaning. This finding

may again be related to a practice which places less emphasis upon meaning in beginning reading instruction.

TABLE 28

COMPARISONS OF PERCENTAGES OF SUBSTITUTIONS WHICH CHANGE MEANING AMONG ALL SUBSTITUTIONS OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 55/240 | 22.92 | 11.20 | 12.630** |
| Ypsi. 2 | 43/367 | 11.72 | | |
| W. Loth | 55/240 | 22.92 | 8.82 | 9.156** |
| Ypsi. 3 | 89/631 | 14.10 | | |

TABLE 29

COMPARISONS OF PERCENTAGES OF SUBSTITUTIONS WHICH CHANGE MEANING AMONG ALL UNCORRECTED SUBSTITUTIONS OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 41/136 | 30.15 | 18.22 | 16.952** |
| Ypsi. 2 | 26/218 | 11.93 | | |
| W. Loth | 41/136 | 30.15 | 16.87 | 18.477** |
| Ypsi. 3 | 51/384 | 13.28 | | |

## SELF-CORRECTION AMONG ALL SUBSTITUTIONS WHICH CHANGE MEANING

The comparisons of percentages of self-correction of substitutions which change meaning among all substitutions which change meaning are shown in Table 30. When the West Lothian and Ypsilanti groups were compared, the differences favored the Ypsilanti scoring-samples but did not reach the required level of significance. It would seem that this aspect of reading for meaning has not been influenced significantly by either of the sets of educational practice.

TABLE 30

COMPARISONS OF PERCENTAGES OF SELF-CORRECTION AMONG ALL SUBSTITUTIONS WHICH CHANGE MEANING OF WEST LOTHIAN AND YPSILANTI SCORING-SAMPLES

| Scoring-Sample | No. | Percentage | Difference | Chi-square |
|---|---|---|---|---|
| W. Loth | 14/55 | 25.45 | -14.08 | 1.609 |
| Ypsi. 2 | 17/43 | 39.53 | | |
| W. Loth | 14/55 | 25.45 | -17.25 | 3.665 |
| Ypsi. 3 | 38/89 | 42.70 | | |

In this section, substitutions judged to change meaning have been used as an index of tendency to read for meaning. The children's substitutions were analyzed from three perspectives. Comparisons of errors revealed that the Ypsilanti scoring-samples, even though they made more substitutions,

were less likely to make substitutions which change meaning. Hence, it would seem that the Ypsilanti children were comparatively more attentive to meaning than were the West Lothian children. Such a difference could follow from a practice which gives greater attention to meaning in beginning reading instruction. The finding that the West Lothian and Ypsilanti samples did not differ significantly in tendency to self-correct substitutions which change meaning does not fully support the above observation. However, the Ypsilanti samples did self-correct a higher proportion of the substitutions which change meaning than did the West Lothian sample, even though the differences were not significant.

# CHAPTER V

# SUMMARY AND CONCLUSIONS

## Problem

This study compared the oral reading achievement of groups of Scottish and American children. Scottish children are usually introduced to reading shortly after the age of 5. In addition, Scottish schools tend to stress phonics in beginning reading. On the other hand, American children are generally introduced to reading shortly after the age of 6. As a further difference, American schools tend to introduce phonics gradually, as one of a number of word recognition techniques. The object of this investigation was to ascertain whether Scottish children obtain an advantage over American children in ability to read orally by being introduced to reading at age 5 rather than age 6 and by receiving a greater emphasis upon phonics in beginning reading.

This investigation is timely because of the movement under way to advance the age of beginning reading in the United States and because of the trend to place greater emphasis upon phonics in beginning reading in American schools. It was felt that the comparisons made in this study would shed light on the issues raised by these developments

with respect to reading instruction in the United States.

## Procedure

The Scottish sample was taken from West Lothian County, Scotland, and tested during February, 1962. This sample was obtained by other investigators in connection with a project supported by the Cooperative Research Branch of the U.S. Office of Education. The choice of West Lothian County was based on evidence that it is representative of Scottish intelligence and attainments. Fifty subjects were drawn as a systematic sample from eight primary schools representing the county as a whole. These children were in their third year of primary school. Their mean age was about 91 months. The usable sample was later reduced to 49 children by the discovery of a spoiled record.

Ypsilanti, Michigan, served as the source of the American samples. The testing in Ypsilanti was conducted by the present investigator during January and February, 1964. A sample of the same mean age as the West Lothian sample was obtained from the Ypsilanti second grade population. A sample 12 months above the mean age of the West Lothian sample was obtained from the Ypsilanti third grade population. Each Ypsilanti sample contained twice as many children as the West Lothian sample, or 98 pupils. The division by sex was the same as in the West Lothian sample. The children in the Ypsilanti samples were selected randomly to obtain the specific

numbers of pupils needed in each age-sex category. Both samples were reasonably normal with respect to intelligence.

Oral reading was measured by The Gray Standardized Oral Reading Paragraphs Test, 1955 Edition. The oral reading of the children was recorded on tapes to obtain permanent records which could be scored later. Years of instruction but not age was a variable when the West Lothian and the Ypsilanti second grade samples were compared on oral reading, whereas age but not years of instruction was a variable when the West Lothian and the Ypsilanti third grade samples were so compared. It was felt that this design would serve to shed light on the relationship between developmental and instructional factors in learning to read orally.

## Data Analysis

The analysis of the data included the following comparisons:

1. The mean scores of the samples were first compared with the test norms as follows:

   a. The West Lothian mean score was compared with the test norm for American children of the same age. This comparison tended to equalize maturational factors, but gave the West Lothian sample the advantage of an additional year of instruction.

   b. The West Lothian mean score was also compared with the test norm for American pupils one year

older. This comparison tended to equalize the amount of formal instruction, but gave American children the benefit of an additional year of maturity.

c. The mean scores of the Ypsilanti samples were compared with the test norms for American pupils of the same ages, in order to obtain evidence about the quality of these samples.

2. The West Lothian test scores were compared with the Ypsilanti test scores. The availability of individual scores for the American samples permitted comparison of variances as well as mean scores. These comparisons have the same import as the comparisons of the West Lothian sample with the test norms, inasmuch as the West Lothian sample was compared with an Ypsilanti sample of the same age as well as with an Ypsilanti sample a year older.

3. The West Lothian oral reading rates were compared with the Ypsilanti oral reading rates in order to investigate the hypothesis that an emphasis on phonics may retard the speed with which a child reads orally.

4. The oral reading accuracy of the West Lothian sample was then compared with the oral reading accuracy of the Ypsilanti samples in order to investigate the hypothesis that an emphasis upon phonics might promote greater accuracy, while retarding rate.

5. The West Lothian and Ypsilanti samples were compared with respect to types of oral reading errors committed.

The types of errors considered were substitutions, mispronunciations,omissions, repetitions, insertions, reversals, and words aided. Here, one could predict that the West Lothian children would tend to have more errors than the Ypsilanti children involving the mechanics of pronunciation, and relatively less errors than the Ypsilanti children stemming from guessing and inability to analyze words.

6. The West Lothian and Ypsilanti samples were lastly compared with respect to tendency to read for meaning, as indicated by word substitutions which change meaning and the self-correction of these errors. Such comparisons could serve as an index of meaningful, literal interpretation during oral reading. Three perspectives were used:

a. The relationship between substitutions judged to change meaning and all substitutions.

b. The relationship between uncorrected substitutions judged to change meaning and all uncorrected substitutions.

c. The relationship between self-corrected substitutions judged to change meaning and all substitutions which change meaning.

## Results

The findings of the six sets of comparisons were as follows:

1. The comparisons of the mean scores of the samples with test norms yielded the following results:

a. The mean score of the West Lothian sample was significantly above the test norm for American children of the same age.

b. The mean score of the West Lothian sample did not differ significantly from the test norm 12 months above the mean age of the sample.

c. The mean scores of the Ypsilanti samples were each about 0.3 of a grade below the test norms for American children of the same ages. These differences were statistically significant, but obviously small.

2. The following results were obtained from the comparison of the test scores of the West Lothian and Ypsilanti samples:

a. The mean score of the West Lothian sample was significantly above that of the Ypsilanti second grade sample, but it did not differ significantly from the mean score of the Ypsilanti third grade sample.

b. The West Lothian sample was slightly more variable than either Ypsilanti sample, but the differences were not significant.

3. The comparison of West Lothian oral reading rates with Ypsilanti oral reading rates revealed results as follows:

a. The rate of oral reading of the West Lothian sample was comparable to that of the Ypsilanti second grade sample, but significantly slower than that of the Ypsilanti third grade sample.

b. The West Lothian sample was somewhat more variable in rate of oral reading than either Ypsilanti sample, but the differences were not significant.

4. The comparison of the oral reading accuracy of the West Lothian sample with the oral reading accuracy of the Ypsilanti samples showed the West Lothian sample to be significantly more accurate than the Ypsilanti second grade sample, but not significantly different in the accuracy of their oral reading from the Ypsilanti third grade sample.

5. When the West Lothian and Ypsilanti samples were compared with respect to types of errors committed, results as follows were obtained:

a. Substitutions constituted a significantly larger percentage of the total errors of the Ypsilanti samples than was the case for the West Lothian sample.

b. Mispronunciations comprised a significantly larger percentage of the total errors of the West Lothian sample than was the case for the Ypsilanti samples.

c. The West Lothian sample had a significantly lower percentage of words aided than the Ypsilanti second grade sample, but did not differ significantly with respect to words aided from the Ypsilanti third grade sample.

d. Comparisons of omissions, repetitions, insertions, and reversals did not produce any educationally significant findings.

6. The results of the comparison of the West Lothian and Ypsilanti samples with respect to tendency to read for meaning are summarized below:

a. For substitutions which change meaning in relation to all substitutions, the percentage of substitutions which change meaning of the West Lothian sample was significantly larger than such percentages for both Ypsilanti samples.

b. For substitutions which change meaning among all uncorrected substitutions, the percentage of substitutions which change meaning of the West Lothian sample was again significantly larger than such percentages for both Ypsilanti samples.

c. For self-correction among all substitutions which change meaning, the differences favored the Ypsilanti samples, but did not reach a level of statistical signficance.

## Implications

The implications of the aforementioned results are discussed below.

The findings that the mean score of the West Lothian sample was significantly above the test norm for American children of the same age and significantly above the mean score of the Ypsilanti sample of the same age can be related to the additional year of schooling which West Lothian children gain by starting their primary education at age 5 rather than 6. The findings that the mean score of the West Lothian sample did not differ significantly from the test norm for American pupils a year older nor from the mean score of the Ypsilanti sample a year older also calls attention to the importance of

instruction, as contrasted with maturity. The extent of instruction seems to be the thing in these comparisons. Hence, these findings appear to support the views of Flesch (1955, 1961) and Durkin (1963) and such recent research reports as those of Brzeinski (1964) and Hillerich (1965) regarding the value of an earlier start in reading. It does seem that children who are introduced to reading in advance of others do gain an initial advantage in ability to read orally. Findings obtained by Taylor (1950), Pringle and Neale (1957), Anderson et al (1964), and Gibson et al (1965) support the same conclusion. Since the present investigation included only children early in the grades, the results do not reveal long-range effects. However, other studies (Morphett and Washburne, 1940; Bradley, 1956; Anderson et al, 1964; Gibson et al, 1965) indicate that the initial advantage gained by an early start in reading is not maintained at later ages.

The finding that the West Lothian sample did not read significantly faster than the Ypsilanti children of the same age, despite the fact that they had attended primary school a year longer, indicates that the methods of teaching reading employed with West Lothian children tend to impede rate of oral reading. The finding that the West Lothian pupils read significantly slower than the Ypsilanti pupils a year older, where years of instruction tended to be equalized, lends additional support to this observation. Such findings could be expected to follow from an approach which emphasizes

phonics (Agnew, 1939). Since West Lothian schools probably place somewhat greater stress on phonics in beginning reading than do Ypsilanti schools, it is likely that this is the instructional factor which accounts for the relatively slow West Lothian rates.

The finding that the West Lothian sample was significantly more accurate in its oral reading than the Ypsilanti sample of the same age, together with the finding that the West Lothian sample read no less accurately than the Ypsilanti sample a year older, indicates that the West Lothian emphasis on phonics tends to produce accurate rather than rapid readers. This interpretation is again supported by the results of Agnew (1939), as well as those of Tate (1937). The detailed analysis which the application of phonics to word recognition involves apparently makes for accurate word recognition, but slows the process of recognition.

The finding that substitutions constituted a significantly larger percentage of the total errors of both Ypsilanti samples than was the case for the West Lothian sample suggests that the American pupils tended to rely upon sight recognition more than did the Scottish pupils. In beginning reading, sight-recognition methods tend to minimize the use of letter-sound clues and to maximize the use of word form, picture, and context clues -- and to encourage guessing. This interpretation would also help to explain why the Ypsilanti children read comparatively rapidly, but less accurately.

The finding that mispronunciations comprised a significantly larger percentage of the total errors of the West Lothian sample than was the case for the Ypsilanti samples suggests that the Scottish pupils tended to rely on phonics more than did the American pupils. Since the spelling, syllabication, and syllabic stress patterns of the English language are somewhat variable and inconsistent, children who rely on phonics would be expected to make more mispronunciations than children who use a combination of word form, picture, phonic, structural, and context clues. It might be mentioned in passing that Rogers (1938) found that words which are mispronounced are also likely to be missed in meaning. As will be brought out later in this discussion, reading for meaning was not a strength of the West Lothian sample, as compared with the Ypsilanti samples.

The finding that the West Lothian sample had a significantly lower percentage of words aided than the Ypsilanti sample of the same age suggests that the Scottish children developed greater independence in word recognition sooner than the American children. The finding that the West Lothian sample did not differ significantly in this regard from the Ypsilanti sample a year older lends additional support to this observation. These findings, too, can probably be related to the stress which West Lothian schools place on phonics in beginning reading.

The finding that the West Lothian sample had a significantly greater tendency to make substitutions which change the meaning of what is read than did both Ypsilanti samples suggests that the stress which West Lothian schools place on phonics in beginning reading may tend to divert the children from the meaning of what they read. One might say they can't see the forest for the trees. Results having the same import have been reported by Morgan and Light (1963), who found that by the end of third grade children whose program stressed a broad, combinational approach to word recognition training tended to have significantly better comprehension than children whose program stressed phonics from the beginning. The finding that the West Lothian and Ypsilanti samples did not differ significantly in tendency to self-correct substitutions which change meaning does not completely support the above interpretation. However, the Ypsilanti samples made the higher percentages of self-correction, even though the differences did not reach the required level of significance.

## CONCLUSIONS

The results of the present investigation seem to warrant the following conclusions, as applied to the samples studied:

1. Children who begin reading at age 5 rather than 6 gain at least an initial advantage in ability to read orally.

2. A stress on phonics in beginning reading tends to promote accurate word recognition, but slows the process of recognition.

3. A reliance on sight recognition tends to decrease accuracy, but increases rate of recognition.

4. The oral reading of children who rely on sight recognition tends to be characterized by a high frequency of word substitutions and refusals.

5. The oral reading of children who rely on phonics tends to be characterized by a high frequency of mispronunciations.

6. A reliance upon phonics tends to divert children from the meaning of what they read.

In general, the findings of this investigation demonstrate that West Lothian children are superior in ability to pronounce words accurately during oral reading. The early start appears to give them an initial advantage, as does the attention given to phonics. However, the evidence also demonstrates that West Lothian children may pay a price for the initial advantage they gain from these practices. For example, they tend to be relatively slow readers, and they tend not to use contextual flow of meaning to best advantage. In any case, the advantage of greater accuracy in oral reading must be weighed against the other aims of instruction in general, and of the language arts in particular.

# APPENDIX A

## INFORMATION ON THE AGES AND IQS OF BOYS AND GIRLS IN THE SAMPLES

TABLE 31

DISTRIBUTION OF AGES BY SEX IN SAMPLES

| Boys | | | | | | Girls | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W.Loth. | | Ypsi.2 | | Ypsi. 3 | | W.Loth. | | Ypsi.2 | | Ypsi. 3 | |
| C.A. | f. | C.A. | f. | C.A. | f. | C.A. | f. | C.A. | f. | C.A. | f. |
| 85 | 1 | 85 | 1 | 97 | None | 85 | None | 85 | None | 97 | None |
| 86 | 3 | 86 | 7 | 98 | 6 | 86 | 1 | 86 | 2 | 98 | 2 |
| 87 | 2 | 87 | 3 | 99 | 5 | 87 | 1 | 87 | 2 | 99 | 2 |
| 88 | 3 | 88 | 5 | 100 | 6 | 88 | 5 | 88 | 10 | 100 | 10 |
| 89 | 2 | 89 | 4 | 101 | 4 | 89 | 3 | 89 | 6 | 101 | 6 |
| 90 | 1 | 90 | 2 | 102 | 2 | 90 | None | 90 | None | 102 | None |
| 91 | 2 | 91 | 6 | 103 | 5 | 91 | 4 | 91 | 8 | 103 | 8 |
| 92 | 2 | 92 | 4 | 104 | 4 | 92 | None | 92 | None | 104 | None |
| 93 | 2 | 93 | 4 | 105 | 4 | 93 | 6 | 93 | 12 | 105 | 12 |
| 94 | 1 | 94 | 2 | 106 | 2 | 94 | 1 | 94 | 2 | 106 | 2 |
| 95 | 3 | 95 | 6 | 107 | 6 | 95 | 2 | 95 | 4 | 107 | 4 |
| 96 | None | 96 | None | 108 | None | 96 | 2 | 96 | 4 | 108 | 4 |
| 97 | 1 | 97 | 2 | 109 | 2 | 97 | 1 | 97 | 2 | 109 | 2 |

TABLE 32

COMPARISON OF THE AGE OF WEST LOTHIAN BOYS WITH THE AGES OF YPSILANTI BOYS, AND THE AGE OF WEST LOTHIAN GIRLS WITH THE AGES OF YPSILANTI GIRLS

| Sex Group | Sample | No. | Mean | s | Difference | t | F |
|---|---|---|---|---|---|---|---|
| Boys | W. Loth. | 23 | 90.30 | 3.51 | .18 | -.20 | 1.07 |
| | Ypsi. 2 | 46 | 90.48 | 3.38 | | | |
| | W. Loth. | 23 | 90.30 | 3.51 | 12.18 | -14.10** | 1.12 |
| | Ypsi. 3 | 46 | 102.48 | 3.32 | | | |
| Girls | W. Loth. | 26 | 91.35 | 3.14 | .00 | .00 | 1.02 |
| | Ypsi. 2 | 52 | 91.35 | 3.11 | | | |
| | W. Loth. | 26 | 91.35 | 3.14 | 12.00 | -16.04** | 1.02 |
| | Ypsi. 3 | 52 | 103.35 | 3.11 | | | |

TABLE 33

COMPARISONS OF AGES OF BOYS WITH AGES OF GIRLS WITHIN THE WEST LOTHIAN AND YPSILANTI SAMPLES

| Sample | Sex Group | No. | Mean | s | Difference | t | F |
|---|---|---|---|---|---|---|---|
| W.Loth. | Boys | 23 | 90.30 | 3.51 | 1.05 | -1.10 | 1.25 |
| | Girls | 26 | 91.35 | 3.14 | | | |
| Ypsi. 2 | Boys | 46 | 90.48 | 3.38 | .87 | -1.32 | 1.19 |
| | Girls | 52 | 91.35 | 3.11 | | | |
| Ypsi. 3 | Boys | 46 | 102.48 | 3.32 | .87 | -1.34 | 1.14 |
| | Girls | 52 | 103.35 | 3.11 | | | |

TABLE 34

COMPARISONS OF IQS OF BOYS WITH IQS OF GIRLS WITHIN THE YPSILANTI SAMPLES

| Sample | Sex Group | No. | Mean | s | Difference | t | F |
|---|---|---|---|---|---|---|---|
| Ypsi. 2 | Boys | 46 | 101.54 | 15.41 | .18 | .10 | .96 |
| | Girls | 52 | 101.23 | 15.76 | | | |
| Ypsi. 3 | Boys | 46 | 100.02 | 15.19 | -.67 | -.21 | .94 |
| | Girls | 52 | 100.69 | 15.71 | | | |

# APPENDIX B

## THE PARAGRAPHS ON THE GRAY STANDARDIZED ORAL READING PARAGRAPHS TEST

The paragraphs on The Gray Standardized Oral Reading Paragraphs Test[1]

1

A boy had a dog.

The dog ran into the woods.

The boy ran after the dog.

He wanted the dog to go home.

But the dog would not go home.

The little boy said,

"I cannot go home without my dog."

Then the boy began to cry.

2

Once there was a little pig.

He lived with his mother in a pen.

One day he saw his four feet.

"Mother," he said, "what can I do with my feet?"

His mother said, "You can run with them."

So the little pig ran round and round the pen.

3

Once there was a cat and a mouse. They lived in the same house. The cat bit off the mouse's tail. "Pray puss," said the mouse, "give me my long tail again."

"No," said the cat, "I will not give you your tail till you bring me some milk."

---

[1]Reproduced by permission of The Bobbs-Merrill Company,Inc.

4

Once there lived a king and a queen in a large palace. But the king and queen were not happy. There were no little children in the house or garden. One day they found a poor little boy and girl at their door. They took them into the beautiful palace and made them their own. The king and queen were then happy.

5

One of the most interesting birds which ever lived in my bird-room was a blue-jay named Jackie. He was full of business from morning till night, scarcely ever still. He had been stolen from a nest long before he could fly, and he had been reared in a house long before he had been given to me as a pet.

6

The part of farming enjoyed most by a boy is the making of maple sugar. It is better than blackberrying and almost as good as fishing. One reason why a boy likes this work is that someone else does most of it. It is a sort of work in which he can appear to be very industrious and yet do but little.

7

It was one of those wonderful evenings such as are found only in this magnificent region. The sun had sunk behind the mountains, but it was still light. The pretty twilight glow embraced a third of the sky, and against its brilliancy stood the dull white masses of the mountains in evident contrast.

8

The crown and glory of a useful life is character. It is the noblest possession of man. It forms a rank in itself, an estate in the general good will, dignifying every station and exalting every position in society. It exercises a greater power than wealth, and is a valuable means of securing honor.

9

He was approximately six feet tall and his body was well proportioned. His complexion inclined to be florid; his eyes were blue and remarkably far apart. A profusion of hair covered the forehead. He was scrupulously neat in his appearance; and, although he habitually left his tent early, he was well dressed.

10

Responding to the impulse of habit Josephus spoke as of old. The others listened attentively but in grim and contemptuous silence. He spoke at length, continuously, persistently, and ingratiatingly. Finally exhausted through loss of strength he hesitated. As always happens in such exigencies he was lost.

11

The attractions of the American prairies as well as of the alluvial deposits of Egypt have been overcome by the azure skies of Italy and the antiquities of Roman architecture. My delight in the antique and my fondness for architectural and archaeological studies verges onto a fanaticism.

12

The hypotheses concerning physical phenomena formulated by the early philosophers proved to be inconsistent and in general not universally applicable. Before relatively accurate principles could be established, physicists, mathematicians, and statisticians had to combine forces and work arduously.

# APPENDIX C

## SKEWNESS AND KURTOSIS OF ORAL READING VARIABLES

SKEWNESS AND KURTOSIS OF ORAL READING VARIABLES

| Variable | Skewness | Kurtosis |
|---|---|---|
| Score | 1.79 | -.31 |
| Rate | -2.20* | -.13 |
| Accuracy[1] | ---- | ---- |
| Substitution | 8.14* | 1.36 |
| Around for Round | 2.31* | -.98 |
| Mispronunciation | 17.12* | 3.75* |
| Omission | 17.54* | 4.53* |
| Repetition | 24.79* | 11.38* |
| Insertion | 13.42* | 2.31* |
| Reversal | 22.76* | 5.53* |
| Words Aided | 9.81* | 1.23 |
| All Substitutions Which Change Meaning | 10.84* | 2.26* |
| Uncorrected Substitutions Which Change Meaning | 12.92* | 2.97* |
| Self-Corrected Substitutions Which Change Meaning | 9.74* | .67 |

*At or above the 5% level.

[1]The skewness and kurtosis of accuracy scores were not computed. The mean for the 218 scores is 33.225. There are 86 cases (39.5%) above the mean and 132 cases (60.5%) below the mean.

# APPENDIX D

## DISTRIBUTIONS OF THE ORAL READING ERRORS OF THE SCORING SAMPLES

TABLE 35

DISTRIBUTION OF SUBSTITUTIONS
OF THE SCORING-SAMPLES

| Error Frequency | Scoring-Samples | | |
|---|---|---|---|
| | West Lothian | Ypsilanti 2 | Ypsilanti 3 |
| 15 | | 1 | |
| 14 | | | |
| 13 | | | |
| 12 | 1 | | 1 |
| 11 | | | |
| 10 | | | 2 |
| 9 | | 1 | 1 |
| 8 | | | 6 |
| 7 | 1 | 1 | 6 |
| 6 | 2 | 5 | 5 |
| 5 | 4 | 4 | 18 |
| 4 | 6 | 12 | 9 |
| 3 | 9 | 13 | 16 |
| 2 | 14 | 15 | 20 |
| 1 | 6 | 20 | 9 |
| 0 | 4 | 5 | 1 |
| Totals | 47 | 77 | 94 |

TABLE 36

DISTRIBUTION OF MISPRONUNCIATIONS
OF THE SCORING-SAMPLES

| Error Frequency | Scoring-Samples | | |
|---|---|---|---|
| | West Lothian | Ypsilanti 2 | Ypsilanti 3 |
| 11 | | | 1 |
| 10 | | | |
| 9 | | 2 | |
| 8 | 1 | | 1 |
| 7 | | | 2 |
| 6 | 4 | | 3 |
| 5 | 4 | | 2 |
| 4 | 3 | | 1 |
| 3 | 3 | 1 | 1 |
| 2 | 2 | 2 | 10 |
| 1 | 13 | 10 | 17 |
| 0 | 17 | 62 | 56 |
| Totals | 47 | 77 | 94 |

TABLE 37

DISTRIBUTION OF OMISSIONS
OF THE SCORING-SAMPLES

| Error Frequency | Scoring-Samples | | |
|---|---|---|---|
| | West Lothian | Ypsilanti 2 | Ypsilanti 3 |
| 7 | | | 1 |
| 6 | | | 3 |
| 5 | | | 2 |
| 4 | 1 | | 1 |
| 3 | 3 | 1 | 5 |
| 2 | 4 | 3 | 11 |
| 1 | 10 | 8 | 28 |
| 0 | 29 | 65 | 43 |
| Totals | 47 | 77 | 94 |

TABLE 38

DISTRIBUTION OF REPETITIONS
OF THE SCORING-SAMPLES

| Error Frequency | Scoring-Samples | | |
|---|---|---|---|
| | West Lothian | Ypsilanti 2 | Ypsilanti 3 |
| 9 | | | 1 |
| 8 | | | |
| 7 | | | |
| 6 | | | 2 |
| 5 | | | |
| 4 | | | 1 |
| 3 | 2 | 1 | 3 |
| 2 | 3 | 4 | 9 |
| 1 | 19 | 9 | 25 |
| 0 | 23 | 63 | 53 |
| Totals | 47 | 77 | 94 |

Table 39

DISTRIBUTION OF INSERTIONS
OF THE SCORING-SAMPLES

| Error Frequency | Scoring-Samples | | |
|---|---|---|---|
| | West Lothian | Ypsilanti 2 | Ypsilanti 3 |
| 4 | 1 | | 1 |
| 3 | | | 6 |
| 2 | 1 | 2 | 13 |
| 1 | 15 | 13 | 20 |
| 0 | 30 | 62 | 54 |
| Totals | 47 | 77 | 94 |

TABLE 40

DISTRIBUTION OF REVERSALS
OF THE SCORING-SAMPLES

| Error Frequency | Scoring-Samples | | |
|---|---|---|---|
| | West Lothian | Ypsilanti 2 | Ypsilanti 3 |
| 1 | 4 | 3 | 9 |
| 0 | 43 | 74 | 85 |
| Totals | 47 | 77 | 94 |

TABLE 41

DISTRIBUTION OF WORDS AIDED
OF THE SCORING-SAMPLES

| Error Frequency | Scoring-Samples | | |
|---|---|---|---|
| | West Lothian | Ypsilanti 2 | Ypsilanti 3 |
| 7 | | 1 | |
| 6 | 1 | 3 | 1 |
| 5 | | 2 | |
| 4 | 2 | 5 | 2 |
| 3 | 4 | 9 | 6 |
| 2 | 7 | 23 | 13 |
| 1 | 9 | 16 | 23 |
| 0 | 24 | 18 | 49 |
| Totals | 47 | 77 | 94 |

# APPENDIX E

## SUBSTITUTIONS OF THE WEST LOTHIAN SCORING - SAMPLE

SUBSTITUTIONS OF THE WEST LOTHIAN SCORING-SAMPLE

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 1 | 1 | 1 | A | | The | | |
| 1 | 1 | 2 | boy | dog | | dog | |
| 1 | 1 | 3 | had | | and | | |
| 1 | 1 | 5 | dog | bone, boy | | | |
| 1 | 2 | 1 | The | | A | | |
| 1 | 2 | 5 | the | | | | that |
| 1 | 2 | 6 | woods | | wood | | |
| 1 | 4 | 1 | He | I | | | |
| 1 | 4 | 2 | wanted | waited (2) | want (2), went | | |
| 1 | 4 | 3 | the | | | | to (2) |
| 1 | 4 | 6 | go | | come (2) | | come |
| 1 | 5 | 4 | would | | wanted | | |
| 1 | 5 | 4+5 | would not | | | | wouldn't(6) |

[1]Frequency of substitution above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 1 | 5 | 6 | | go | come | | |
| 1 | 6 | 1 | The | | That | | |
| 1 | 6 | 3 | boy | dog | | | |
| 1 | 7 | 2 | cannot | | can't (3) | | can't (3) |
| 1 | 7 | 6 | my | | you | | |
| 1 | 8 | 2 | the | | | | he (2) |
| 2 | 1 | 1 | Once | | | | One |
| 2 | 1 | 3 | was | | were | | |
| 2 | 2 | 1 | He | | | | Who |
| 2 | 2 | 4 | his | | him | | a |
| 2 | 2 | 7 | a | | the (2) | | |
| 2 | 2 | 8 | pen | paint | | | |
| 2 | 3 | 4 | saw | was (2) | | was (2) | said |
| 2 | 3 | 5 | his | | it | | a |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 2 | 3 | 6 | four | | front | | |
| 2 | 3 | 7 | feet | | legs | meats | |
| 2 | 4 | 1 | Mother | | | He | |
| 2 | 4 | 3 | said | | | | says |
| 2 | 4 | 5 | can | can't | | | a |
| 2 | 6 | 3 | said | | says (2) | | |
| 2 | 6 | 4 | You | | | | To |
| 2 | 7 | 1 | So | | | | To |
| 2 | 7 | 2 | the | | that | | that (2) |
| 2 | 7 | 6 | round | | around (3) | | |
| 2 | 7 | 7 | and | | | | the |
| 2 | 7 | 8 | round | room | | | |
| 2 | 7 | 10 | pen | pig | | | |
| 3 | 1 | 3 | was | | | | lived (3) |

[1]Frequency of substitutions above one occurrence in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 3 | 1 | 9 | They | | | | There |
| 3 | 2 | 2 | in | | | | with |
| 3 | 2 | 3 | the | | a (2) | | a (2) |
| 3 | 2 | 4 | same | | small (2), some | | some |
| 3 | 2 | 10 | the | | | | a |
| 3 | 3 | 1 | mouse's | | mouse (5) | | mice's, mouse |
| 3 | 3 | 3 | Pray | Party | But, Prayer | | |
| 3 | 3 | 4 | puss | | pussy (6) | | pussy |
| 3 | 3 | 7 | mouse | mother | | | |
| 3 | 4 | 3 | my | | the | | |
| 3 | 4 | 6 | again | | | | back |
| 3 | 6 | 5 | me | | my | | my (2) |
| 3 | 6 | 6 | some | | | | my |
| 4 | 1 | 3 | lived | | | | a, was |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 4 | 1 | 4 | a | | | | these |
| 4 | 1 | 5 | king | kind | | | |
| 4 | 1 | 6 | and | | | | the |
| 4 | 1 | 10 | a | | | | the |
| 4 | 2 | 1 | large | | huge, larger | | |
| 4 | 2 | 2 | palace | police | place (6) | | |
| 4 | 3 | 3 | There | | They (7) | | They (4) |
| 4 | 3 | 4 | were | | | | was |
| 4 | 3 | 5 | no | | not (2) | | not (2) |
| 4 | 3 | 7 | children | | child | | |
| 4 | 4 | 3 | or | | | | and |
| 4 | 4 | 5 | One | | | | Naught |
| 4 | 4 | 7 | they | he | | he | there (2) |
| 4 | 5 | 3 | boy | dog | | | |
| 4 | 5 | 4 | and | | | | it |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 4 | 5 | 6 | at | | | | and |
| 4 | 5 | 7 | their | | the (2) | | the (2) |
| 4 | 6 | 4 | the | | a (2), their | | a, that |
| 4 | 7 | 3 | their | | | | the |
| 4 | 7 | 4 | own | one (4) | | | home |
| 4 | 8 | 2 | then | | very | | the |
| 4 | 8 | 3 | happy | | happier (2) | | |
| 5 | 2 | 1 | ever | | | | even, every (2) |
| 5 | 2 | 2 | lived | | lives | | |
| 5 | 2 | 8 | a | | the | | |
| 5 | 3 | 3 | He | | It, | | |
| 5 | 3 | 8 | from | | for | | for |
| 5 | 4 | 4 | scarcely | searching | | | |
| 5 | 4 | 5 | ever | | | | even, every (2) |
| 5 | 4 | 6 | still | stole | | | |

[1]Frequency of substitutions above one occurence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 5 | 5 | 3 | stolen | thrown | stole | | |
| 5 | 5 | 5 | a | | the | | the (2) |
| 5 | 5 | 9 | he | | | | the |
| 5 | 6 | 8 | in | | | from | |
| 5 | 6 | 9 | a | | | | his |
| 5 | 7 | 2 | before | | | | fore |
| 5 | 7 | 7 | to | | | | in |
| 6 | 1 | 2 | part | | | boy | |
| 6 | 2 | 6 | maple | | | mop | |
| 6 | 3 | 1 | better | | | butter | |
| 6 | 3 | 3 | black-berrying | blackberry blackberries(3) | | blackberries | |
| 6 | 3 | 5 | almost | | | | most |
| 6 | 4 | 7 | a | | the | | |
| 6 | 4 | 9 | likes | | | | like |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 6 | 5 | 3 | is | | | | it |
| 6 | 5 | 4 | that | | this | | |
| 6 | 5 | 5 | someone | | everyone | | |
| 6 | 6 | 5 | sort | | | | short |
| 6 | 6 | 10 | he | | | | we |
| 6 | 7 | 4 | very | | | | every (2) |
| 6 | 7 | 5 | industrious | | interested | | |
| 6 | 7 | 7 | yet | | get | | |
| 6 | 7 | 8 | do | | | | to |
| 6 | 7 | 8+9 | do but | | to be | | |
| 6 | 7 | 9 | but | | | much | |
| 7 | 1 | 7 | evenings | things | | | |
| 7 | 2 | 3 | are | | very | | |
| 7 | 2 | 4 | found | fond | | | |
| 7 | 2 | 7 | this | | the | | |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 7 | 3 | 1 | region | reign (or rain) | | | |
| 7 | 5 | 2 | twilight | twinkling | | | |
| 7 | 5 | 3 | glow | | | glue | |
| 7 | 5 | 8 | the | | | | a |
| 7 | 6 | 5 | brilliancy | | brilliance | | |
| 7 | 7 | 5 | mountains | fountains | | | |
| 7 | 7 | 6 | in | | an | | |
| 7 | 7 | 7 | evident | invent | | | |
| 8 | 2 | 6 | possession | position | | | |
| 8 | 3 | 4 | a | | the | | |
| 8 | 4 | 7 | station | | | nation | |
| 8 | 5 | 2 | exalting | explaining | | | |
| 9 | 2 | 4 | proportioned | propositioned | | | |
| 9 | 4 | 5 | profusion | provision | | | |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 9 | 5 | 4 | He | | It | | |
| 9 | 6 | 2 | in | | and | | |
| 9 | 6 | 4 | appearance | apprentice | | | |



[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

# APPENDIX F

## SUBSTITUTIONS OF THE YPSILANTI SECOND GRADE SCORING - SAMPLE

SUBSTITUTIONS OF THE YPSILANTI SECOND GRADE SCORING-SAMPLE

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] Uncorrected: Change Meaning | Uncorrected: Not Change Meaning | Self-Corrected: Change Meaning | Self-Corrected: Not Change Meaning |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | A | | | | The |
| 1 | 1 | 2 | boy | | | dog | |
| 1 | 1 | 3 | had | | and (2), has (2) | | |
| 1 | 2 | 1 | The | | | | A (4), and |
| 1 | 2 | 3 | ran | | run, runs | | |
| 1 | 2 | 5 | the | | | | a |
| 1 | 2 | 6 | woods | words | wood | | |
| 1 | 4 | 1 | He | We | It | | Him |
| 1 | 4 | 2 | wanted | | want (2), wants(3) | | had, went (6) |
| 1 | 4 | 3 | the | | | | to (8) |
| 1 | 4 | 6 | go | | come, get | | come (7), get |
| 1 | 5 | 2 | the | | | | he (2) |
| 1 | 5 | 4 | would | could | | | wanted |
| 1 | 5 | 4+5 | would not | | wouldn't (3) | | wouldn't (3) |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 1 | 5 | 6 | go | | | | come (2) |
| 1 | 6 | 4 | said | | says | | |
| 1 | 7 | 2 | cannot | going to | can't (9) | | can't (2) |
| 1 | 7 | 3 | without | | with (4) | | |
| 1 | 8 | 1 | Then | | when (3) | | There, When |
| 1 | 8 | 2 | the | | | | he (5) |
| 1 | 8 | 3 | boy | dog | | | |
| 1 | 8 | 4 | began | | begin, begins | | |
| 1 | 8 | 6 | cry | carry | call (2) | | |
| 2 | 1 | 1 | Once | | Next | | On, One (3) |
| 2 | 1 | 6 | pig | pie | | | |
| 2 | 2 | 1 | He | | who | | The (2) |
| 2 | 2 | 2 | lived | | lives | | liked |
| 2 | 2 | 2+3 | lived with | laughed when | | | |
| 2 | 2 | 3 | with | | | | in (2) |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 2 | 2 | 4 | his | | | | a (2), he |
| 2 | 2 | 6 | in | | | | he, on |
| 2 | 2 | 7 | a | | his, the (4) | | the (5) |
| 2 | 2 | 8 | pen | | place | | barn |
| 2 | 3 | 1 | One | | | | A, He, Once |
| 2 | 3 | 3 | he | | | | his (4), they (2) |
| 2 | 3 | 4 | saw | | said (4) | was (2) | said (2) |
| 2 | 3 | 5 | his | | this | | |
| 2 | 3 | 6 | four | father (2), sore | | | front |
| 2 | 3 | 7 | feet | | | feeding | |
| 2 | 4 | 1 | Mother | | Mothers | | |
| 2 | 4 | 2 | he | | | | and |
| 2 | 4 | 3 | said | | say | | |
| 2 | 4 | 5 | can | | | can't | |
| 2 | 5 | 1 | feet | | foot | | |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 2 | 6 | 1 | His | | This | | He (2), This (2) |
| 2 | 6 | 3 | said | | say (2) | | |
| 2 | 6 | 4 | You | I | We | I (2) | |
| 2 | 6 | 5 | can | can't | | | |
| 2 | 6 | 8 | them | | | | him |
| 2 | 7 | 1 | So | | | | He, Said, You |
| 2 | 7 | 2 | the | | a | | a |
| 2 | 7 | 5 | ran | | run (4) | | |
| 2 | 7 | 6 | round | | around (45) | | around (3) |
| 2 | 7 | 7 | and | | | | the |
| 2 | 7 | 9 | the | | | | this |
| 2 | 7 | 10 | pen | | bin | pig | |
| 3 | 1 | 1 | Once | | | | one |
| 3 | 1 | 7 | a | | | | the |
| 3 | 1 | 9 | They | | | | There, Then |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 3 | 2 | 3 | the | | a (4) | | a (2) |
| 3 | 2 | 4 | same | | side, small (2) | | small |
| 3 | 2 | 6 | The | | | | That, They |
| 3 | 2 | 8 | bit | brought | bite | pit | |
| 3 | 2 | 9 | off | | | | of |
| 3 | 3 | 1 | mouse's | | mouse (8) | | mouse (2) |
| 3 | 3 | 3 | Pray | Poor | Bring, Please, Purr, Pussy | | |
| 3 | 3 | 4 | puss | Press | Puff, pussy (4) | | pussy |
| 3 | 3 | 5 | said | | | | the |
| 3 | 4 | 1 | give | gave | get | gave | |
| 3 | 5 | 1 | No | | | | How |
| 3 | 5 | 6 | will | | | | want |
| 3 | 5 | 8 | give | | | | get |
| 3 | 6 | 1+2 | tail till | | tall tail | | |
| 3 | 6 | 2 | till | | until (2), when | | |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 3 | 6 | 4 | bring | | brought (2) | | began |
| 3 | 6 | 5 | me | | | | my |
| 4 | 1 | 3 | lived | | was | I | was |
| 4 | 1 | 5 | king | kind (2) | | kind | |
| 4 | 1 | 8 | queen | green | | | |
| 4 | 1 | 10 | a | | the (2) | | |
| 4 | 2 | 1 | large | | lovely | | long |
| 4 | 2 | 2 | palace | | place (12) | | |
| 4 | 2 | 4 | the | | | | they |
| 4 | 3 | 3 | There | | They (6) | | They (3), Where |
| 4 | 3 | 4 | were | | was (3) | | |
| 4 | 3 | 5 | no | | not | | not |
| 4 | 5 | 1 | poor | | | pony (2) | |
| 4 | 5 | 6 | at | | | | that |
| 4 | 5 | 7 | their | | the (3) | | the |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 4 | 6 | 1 | took | | | | look |
| 4 | 6 | 2 | them | | | him (2) | |
| 4 | 6 | 3 | into | | in | | |
| 4 | 6 | 4 | the | | | | a |
| 4 | 6 | 6 | palace | | places | | |
| 4 | 7 | 1 | made | | | | took |
| 4 | 7 | 3 | their | | | | where |
| 4 | 7 | 3+4 | their own | cry on | | | |
| 4 | 7 | 4 | own | town | only | | |
| 4 | 7 | 5 | The | | | | Then |
| 4 | 8 | 2 | then | | there | | |
| 5 | 1 | 1 | One | | In, Once | | In |
| 5 | 1 | 5 | interesting | | interested | | |
| 5 | 3 | 3 | He | | | | It |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 5 | 4 | 2 | till | | until | | |
| 5 | 4 | 5 | ever | | every, never | | |
| 5 | 7 | 9 | as | | he's | | |
| 6 | 1 | 6 | most | | must | | |
| 6 | 3 | 3 | black-berrying | | | blackberries | |
| 6 | 5 | 1 | this | | his, to | | |
| 6 | 6 | 5 | sort | | | | short |
| 6 | 7 | 5 | industrious | | interested | | |
| 7 | 3 | 1 | region | religion | | | |
| 7 | 6 | 4 | its | | the | | |
| 7 | 6 | 5 | brilliancy | | brilliance | | |
| 9 | 3 | 7 | were | | are | | |
| 10 | 6 | 2 | through | | though | | |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

# APPENDIX G

## SUBSTITUTIONS OF THE YPSILANTI THIRD GRADE SCORING - SAMPLE

SUBSTITUTIONS OF THE YPSILANTI THIRD GRADE SCORING-SAMPLE

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] Uncorrected | | Self-Corrected | |
|---|---|---|---|---|---|---|---|
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 1 | 1 | 1 | A | | The | | |
| 1 | 1 | 2 | boy | dog | | big, dog (2) | |
| 1 | 1 | 3 | had | pet | and (2), has | | |
| 1 | 2 | 1 | The | | a (2) | | A, Then |
| 1 | 2 | 2 | dog | boy | | | |
| 1 | 2 | 5 | the | | | | a |
| 1 | 3 | 1 | The | | A | | A, He |
| 1 | 3 | 2 | boy | dog | boys | dog (4) | |
| 1 | 3 | 4 | after | | | | away |
| 1 | 4 | 1 | He | I (2), We | | | What |
| 1 | 4 | 2 | wanted | | want (7), watched, went, would | | want (6) |
| 1 | 4 | 3 | the | | | | a, to (4) |
| 1 | 4 | 4 | dog | | | | it |
| 1 | 4 | 6 | go | | come (6) | | come (6), have |

[1] Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 1 | 5 | 4 | would | could (2) | wanted | | |
| 1 | 5 | 4+5 | would not | | | | wouldn't |
| 1 | 5 | 6 | go | | | | come (3) |
| 1 | 6 | 1 | The | | | | Let |
| 1 | 6 | 4 | said | | say | | |
| 1 | 7 | 2 | cannot | can too | can't (4) | | can't, don't, do not |
| 1 | 7 | 3 | go | | | | get |
| 1 | 7 | 5 | without | | with (4) | | |
| 1 | 7 | 6+7 | my dog | | | | you (2) |
| 1 | 8 | 1 | Then | | When (5) | | When (2), Where |
| 1 | 8 | 2 | the | | a | | he |
| 1 | 8 | 3 | boy | dog (2) | | dog (2) | |
| 1 | 8 | 4 | began | | begin(2),begins | | |
| 1 | 8 | 6 | cry | care | | sit | |
| 2 | 1 | 2 | there | three | | | they (2) |

[1] Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 2 | 1 | 3 | was | | were | | |
| 2 | 1 | 6 | pig | | | big | |
| 2 | 2 | 1 | He | | It, The pig (2), Who (2) | I | And, The |
| 2 | 2 | 2 | lived | | lives | loved | |
| 2 | 2 | 3 | with | | then | | in, which |
| 2 | 2 | 4 | his | | a (3) | | a |
| 2 | 2 | 6 | in | | on | | |
| 2 | 2 | 7 | a | | the (8) | | his |
| 2 | 2 | 8 | pen | | | pig (2) | |
| 2 | 3 | 1 | One | | The | | Once |
| 2 | 3 | 3 | he | | | | the (5) |
| 2 | 3 | 4 | saw | was | said | was (3) | said (2) |
| 2 | 3 | 5 | his | | | | the |
| 2 | 3 | 6 | four | father's | | | |

[1]Frequency of substitutions above one occurence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 2 | 3 | 7 | feet | | feets | | |
| 2 | 4 | 1 | Mother | | Mothers (5) | | Mothers (2) |
| 2 | 4 | 4 | what | | | | why |
| 2 | 4 | 5 | can | can't | | | |
| 2 | 4 | 6 | I | | | You | |
| 2 | 4 | 7 | do | | | | to |
| 2 | 4 | 9 | my | | | | me (2) |
| 2 | 6 | 1 | His | | | | He (3), Here |
| 2 | 6 | 3 | said | | say | | |
| 2 | 6 | 4 | You | | | I | |
| 2 | 6 | 5 | can | | | can't | |
| 2 | 6 | 6 | run | ride | rub | | |
| 2 | 6 | 8 | them | | him (2), many me (2) | | me |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 2 | 7 | 1 | So | | Then | | |
| 2 | 7 | 2 | the | | | | they |
| 2 | 7 | 4 | pig | dog | | | |
| 2 | 7 | 5 | ran | | run | | |
| 2 | 7 | 6 | round | | around (53) | | around (7) |
| 2 | 7 | 8 | round | | ran | | |
| 2 | 7 | 9 | the | | | | in |
| 2 | 7 | 10 | pen | | pond | | pit (2) |
| 3 | 1 | 2 | there | | | | they |
| 3 | 1 | 3 | was | | were | | |
| 3 | 1 | 9 | They | | | | That, The, There |
| 3 | 2 | 3 | the | | a (9) | | a (7) |
| 3 | 2 | 4 | same | | some (2) | | some (2) |
| 3 | 2 | 5 | house | | | | houses |
| 3 | 2 | 6 | The | | A | | They |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] Uncorrected | | Self-Corrected | |
|---|---|---|---|---|---|---|---|
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 3 | 2 | 8 | bit | | bites | | |
| 3 | 2 | 9 | off | | | | of, other |
| 3 | 3 | 1 | mouse's | | mice, mouse (24) | | mouse (2) |
| 3 | 3 | 2 | tail | | tails | | |
| 3 | 3 | 3 | Pray | | Prayed, Purr | Play, Played | |
| 3 | 3 | 3+4 | Pray puss | Play pass | | | |
| 3 | 3 | 4 | puss | | pussy (4) | pus | pussy |
| 3 | 4 | 1 | give | | | gave | get |
| 3 | 4 | 3 | my | | a, some | | back, the |
| 3 | 4 | 6 | again | | | | back |
| 3 | 5 | 5+6 | I will | | I'll | | |
| 3 | 5 | 8 | give | | | | get |
| 3 | 5 | 9 | you | | | | the |
| 3 | 5 | 10 | your | | | my | |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 3 | 6 | 1 | tail | | | | long |
| 3 | 6 | 1+2 | tail till | | tall tail | | |
| 3 | 6 | 2 | till | | still, until | | |
| 3 | 6 | 4 | bring | | | | begin, brought |
| 3 | 6 | 5 | me | | | | my |
| 4 | 1 | 3 | lived | | was (2) | | was (8) |
| 4 | 1 | 5 | king | kind (2) | | kind, little | |
| 4 | 1 | 6 | and | | | | had |
| 4 | 1 | 7 | a | | the | | |
| 4 | 1 | 8 | queen | quick | | green | |
| 4 | 1 | 10 | a | | the (3) | | |
| 4 | 2 | 1 | large | | | little | very |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 4 | 2 | 2 | palace | | place (9) | | |
| 4 | 2 | 4 | the | | this | | |
| 4 | 2 | 6 | and | | | | did |
| 4 | 3 | 3 | There | | They (7) | | They (9) |
| 4 | 3 | 4 | were | | was (7) | | |
| 4 | 3 | 5 | no | | not (3) | two | a(2), not |
| 4 | 4 | 1 | the | | a | | their |
| 4 | 4 | 3 | or | no | | | |
| 4 | 4 | 5 | One | | | | once |
| 4 | 4 | 7 | they | | | | then, there (2) |
| 4 | 4 | 8 | found | followed | | followed | |
| 4 | 4 | 9 | a | | the | | |
| 4 | 5 | 6 | at | | in (2) | | |
| 4 | 5 | 7 | their | | the (6) | | the (2) |
| 4 | 6 | 1 | took | | | | looked, told |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 4 | 6 | 2 | them | him (2) | | | |
| 4 | 6 | 3 | into | | to | | |
| 4 | 6 | 4 | the | | their | | a (2) |
| 4 | 6 | 6 | palace | | | | place |
| 4 | 7 | 4 | own | | home (3) | | |
| 4 | 8 | 2 | then | | they, very (2) | | they, very (2) |
| 5 | 1 | 1 | One | | | | Once |
| 5 | 1 | 6 | birds | | bird | | |
| 5 | 1 | 7 | which | | with | | are, with |
| 5 | 2 | 1 | ever | | | | every (2), were (2) |
| 5 | 2 | 2 | lived | | | | lay, lives |
| 5 | 2 | 3 | in | | | | on |
| 5 | 2 | 4 | my | | | | me |
| 5 | 2 | 5 | bird- | | bed-(5) | | bed- |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 5 | 2 | 7 | was | | | | is |
| 5 | 2 | 8 | a | | | | the |
| 5 | 3 | 3 | He | | | | It |
| 5 | 3 | 5 | full | | | | fill |
| 5 | 3 | 7 | business | bushes | busy | | |
| 5 | 4 | 4 | scarcely | securely | | | |
| 5 | 4 | 5 | ever | | even, every (2) never, very | | every (2) |
| 5 | 5 | 1 | had | | even | | |
| 5 | 5 | 1+2 | had been | hadn't never | | | |
| 5 | 5 | 2 | been | | | | a |
| 5 | 5 | 3 | stolen | | | told | |
| 5 | 5 | 4 | from | | | | for |
| 5 | 5 | 5 | a | | the (8) | | |
| 5 | 5 | 5+6 | a nest | | | | the nearest |
| 5 | 5 | 9 | he | | | | the |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 5 | 6 | 5 | had | | | | could |
| 5 | 6 | 6 | been | | the | | |
| 5 | 6 | 7 | reared | | raised (2) | | raised (2) |
| 5 | 6 | 8 | in | | into | | into |
| 5 | 6 | 9 | a | | the (2) | | |
| 5 | 6 | 10 | house | mouse | room | | |
| 5 | 7 | 4 | had | | was | | |
| 5 | 7 | 5 | been | | even | | |
| 5 | 7 | 6 | given | | | | giving |
| 6 | 1 | 1 | The | | Then | | |
| 6 | 1 | 2 | part | | | | pat |
| 6 | 1 | 7 | by | | | | of |
| 6 | 2 | 2 | is | | in (3) | | |
| 6 | 2 | 4 | making | | | | marking (2) |
| 6 | 2 | 5 | of | | | | a |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 6 | 2 | 6 | maple | | | apple | |
| 6 | 2 | 7+8 | It is | | | | It's |
| 6 | 2 | 8 | is | | was | | was |
| 6 | 3 | 3 | black-berrying | blackberry (6) | | | huckleberrying |
| 6 | 3 | 5 | almost | | most | | |
| 6 | 4 | 3 | fishing | frying | | | |
| 6 | 4 | 4 | One | | The (7), Their | | On |
| 6 | 4 | 4+5 | One reason | | | | There were |
| 6 | 4 | 5 | reason | raccoon | | | |
| 6 | 4 | 7 | a | | the | | the (2) |
| 6 | 5 | 1 | this | | his (2), the | | his |
| 6 | 5 | 8 | most | not | | not (2) | |
| 6 | 6 | 2 | It | | He | | |
| 6 | 6 | 4 | a | | the | | |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 6 | 6 | 5 | sort | | | | short (3) |
| 6 | 6 | 10 | he | | we (3) | | we |
| 6 | 7 | 4 | very | | every, most | | the |
| 6 | 7 | 5 | industrious | | interested (3)<br>interesting (3) | | |
| 6 | 7 | 7 | yet | | | | get (3) |
| 6 | 7 | 8 | do | | | | not, to |
| 6 | 7 | 8+9 | do but | | to be | | |
| 6 | 7 | 9 | but | | | | nothing |
| 7 | 1 | 5 | those | | these | | the most |
| 7 | 2 | 3 | are | | | | there, they |
| 7 | 2 | 6 | in | | if | | |
| 7 | 2 | 7 | this | | a, the (3) | | his |
| 7 | 3 | 1 | region | reason, religion(2) | | | |
| 7 | 4 | 1 | mountains | | | | mountain |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] | | | |
|---|---|---|---|---|---|---|---|
| | | | | Uncorrected | | Self-Corrected | |
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 7 | 5 | 3 | glow | | glowed (2) | | |
| 7 | 5 | 4 | embraced | | embracing | embarrassed | |
| 7 | 6 | 4 | its | | it, the | | |
| 7 | 6 | 5 | brilliancy | | brilliance (2) brilliancies, brilliant | | |
| 7 | 7 | 1 | white | | whites | | |
| 7 | 7 | 5 | mountains | | mountain | | |
| 7 | 7 | 6 | in | | an, and | | |
| 8 | 2 | 6 | possession | position | | position | |
| 8 | 3 | 8 | an | | and | | |
| 8 | 3 | 10 | in | | of | | |
| 8 | 4 | 5 | dignifying | defying | | | |
| 8 | 5 | 2 | exalting | exactly | | | |
| 8 | 5 | 5 | in | | and | | |
| 8 | 6 | 4 | greater | | great | | |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

| Paragraph No. | Line No. | Word No. | Word | Substitutions[1] Uncorrected | | Self-Corrected | |
|---|---|---|---|---|---|---|---|
| | | | | Change Meaning | Not Change Meaning | Change Meaning | Not Change Meaning |
| 8 | 7 | 2 | is | | | | it |
| 8 | 7 | 5 | means | | mean | | |
| 8 | 7 | 7 | securing | | secure | | |
| 9 | 1 | 8 | his | | its | | |
| 9 | 3 | 1 | inclined | | included | | |
| 9 | 4 | 4 | A | | His | | |
| 9 | 4 | 5 | profusion | profession(2) | | | |
| 9 | 5 | 2 | the | | his | | |
| 9 | 6 | 7 | he | | the | | |

[1]Frequency of substitutions above one occurrence appears in parentheses after each entry.

BIBLIOGRAPHY

Agnew, Donald C. The effect of varied amounts of phonetic training on primary reading. Duke University Research Studies in Education, No. 5. Durham, North Carolina: Duke University Press, 1939.

Anderson, Irving H., et al. Comparisons of the reading and spelling achievement and quality of handwriting of groups of English, Scottish, and American children. Cooperative Research Project No. 1903. Ann Arbor, Michigan: The University of Michigan, 1964.

Appleton, Edith. Kindergarteners pace themselves in reading. Elementary School Journal, 1964, 64, 248-252.

Austin, Mary C., and Morrison, Coleman. The first R: the Harvard report on reading in elementary schools. New York: The Macmillan Company, 1963.

Bark, William, and Rapoport, Henry (Co-Chairmen). Report of the San Francisco Curriculum Survey Committee. San Francisco: Barden Printing Company, 1960.

Bradley, Beatrice E. An experimental study of the readiness approach to reading. Elementary School Journal, 1956, 56, 262-7.

British Information Services. Education in Great Britain. London: Cox and Sharland, Ltd., 1960.

Bruce, D. J. The analysis of word sounds by young children. British Journal of Educational Psychology, 1964, 34, 158-70.

Bruner, Jerome S., et al. A study of thinking. New York: John Wiley & Sons, Inc., 1956.

Brzeinski, Joseph E. Reading in the kindergarten. In Teaching Young Children to Read, U.S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1964, No. 19 (OE-30014), 50-58. Washington, D.C.: U.S. Government Printing Office, 1964.

Census of the population, 1960, Volume 1, Characteristics of the population, Part 24, Michigan. Washington, D.C.: U.S. Department of Commerce, Bureau of the Census, 1962.

Census 1951 Scotland: Volume 1. Edinburgh: Her Majesty's Stationery Office, 1952.

Census 1951 Scotland: Volume 3. Edinburgh: Her Majesty's Stationery Office, 1954.

Census 1951 Scotland: Volume 4. Edinburgh: Her Majesty's Stationery Office, 1956.

Census 1961 Scotland: Preliminary report. Edinburgh: Her Majesty's Stationery Office, 1962.

Cleland, Donald L., and Miller, Harry B. Instruction in phonics and success in beginning reading. Elementary School Journal, 1965, 65, 278-82.

Clymer, Theodore. The utility of phonic generalizations in the primary grades. The Reading Teacher, 1963, 16, 252-60.

Diack, Hunter. Reading and the psychology of perception. Nottingham: Peter Skinner, 1960.

Dixon, Wilfrid J., and Massey, Frank J., Jr. Introduction to statistical analysis. Second edition. New York: McGraw-Hill Book Company, Inc., 1957.

Dolch, Edward W., and Bloomster, Maurine. Phonic readiness. Elementary School Journal, 1937, 38, 201-5.

Durkin, Dolores. Children who learned to read at home. Elementary School Journal, 1961, 62, 15-18.

Durkin, Dolores. Children who read before grade 1: a second study. Elementary School Journal, 1963, 64, 143-8.

Durkin, Dolores. Children who read before first grade. In Teaching Young Children to Read, U.S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1964, No. 19 (OE-30014), 78-84. Washington, D.C.: U.S. Government Printing Office, 1964. (a)

Durkin, Dolores. Early readers -- reflections after six years of research. The Reading Teacher, 1964, 18, 3-7. (b)

Edwards, Allen L. Statistical analysis for students in psychology and education. New York: Rinehart & Company, Inc., 1946.

Flesch, Rudolph. Why Johnny can't read and what you can do about it. New York: Harper and Brothers, 1955.

Flesch, Rudolph. The phonics question. In Controversial Issues in Reading, Proceedings of the 10th Annual Reading Conference, Lehigh University, 1961, 10, 71-6.

Francis, W. Nelson. The structure of American English. New York: The Ronald Press Company, 1958.

Fries, Charles C. Linguistics and reading. New York: Holt, Rinehart, and Winston, Inc., 1963.

Fry, Edward. A frequency approach to phonics. Elementary English, 1964, 41, 759-65.

Geordiady, N. P., Romano, L., and Baranowski, A. To read or not to read -- in kindergarten. Elementary School Journal, 1965, 65, 306-11.

Gibson, Robert L., et al. A comparative study of the academic achievements of elementary age students of the United States and the British Isles. Cooperative Research Project No. 2177. Toledo, Ohio: The University of Toledo, 1965.

Gray, William S. The teaching of reading and writing: an international survey. Monographs on Fundamental Education, X. UNESCO, 1956.

Guilford, J. P. Fundamental statistics in psychology and education. Fourth edition. New York: McGraw-Hill Book Company, Inc., 1965.

Heilman, Arthur W. Principles and practices of teaching reading. Columbus, Ohio: Charles E. Merrill Books, Inc., 1961.

Henderson, M. Progress report of reading study, 1952-1955. Champaign, Illinois: Board of Education, Community Unit School District No. 4, 1955.

Hildreth, Gertrude. Reading methods for the English language. The Reading Teacher, 1961, 15, 75-80.

Hillerich, Robert L. Pre-reading skills in kindergarten: a second report. Elementary School Journal, 1965, 65, 312-17.

Hockett, Charles F. A course in modern linguistics. New York: The Macmillan Company, 1958.

Hovland, C. I. Human learning and retention. In S. S. Stevens (Ed.), Handbook of Experimental Psychology, 613-689. New York: John Wiley & Sons, Inc., 1960.

Inglis, W. B. The early stages of reading. In Scottish Council for Research in Education. Studies in Reading, Vol. 1. London: University of London Press, Ltd., 1948, 1-92.

Lindquist, E. F. Design and analysis of experiments in psychology and education. Boston: Houghton Mifflin Company, 1953.

Little, William, et al. The Oxford universal dictionary on historical principles. Third edition, revised with addenda. London: The Oxford University Press, 1955.

Luke, Edith. The teaching of reading by the sentence method. London: Methuen and Company, Ltd., 1931.

MacGinitie, Walter Harold. Contextual constraint in English prose. Unpublished doctoral dissertation, Columbia University, 1960.

Marckwardt, Albert H. American English. New York: Oxford University Press, 1958.

McNeil, John D., and Stone, Janis. Note on teaching children to hear separate sounds in spoken words. Journal of Educational Psychology, 1965, 56, 13-15.

McNemar, Quinn. Psychological statistics. Third edition. New York: John Wiley & Sons, Inc., 1962.

Morgan, Elmer F., Jr., and Light, Morton. A statistical evaluation of two programs of reading instruction. The Journal of Educational Research, 1963, 57, 99-101.

Morphett, Mabel V., and Washburne, Carleton. Postponing formal instruction: a seven-year case study. In the effect of administrative practices on the character of the education program - symposium. Washington, D.C.: American Educational Research Association, 1940.

National Education Association. Estimates of school statistics, 1962-63. Washington, D.C.: 1201 Sixteenth Street, N.W., 1962.

National Education Association. Ranking the states, 1963-64. NEA Research Bulletin, 1964, 42, No. 1 (February), 14-17.

National Education Association. The problem: teacher supply less than demand. NEA Research Bulletin, 1964, No. 4 (December), 118-23.

Poor, Gerald L., and Griffith, Gladys I. Public education in Michigan. Revised edition. Mount Pleasant, Michigan: Division of Field Services, Central Michigan University, 1959.

Pringle, M. L. Kelmer, and Neale, M.D. A note on the use of the Schonell and Gates reading tests in the first year of the junior school. British Journal of Educational Psychology, 1957, 27, 134-41.

Rogers, Maurine V. Comprehension in oral and silent reading. Journal of General Psychology, 1937, 17, 394-97.

Russell, David H. Primary reading programs in England and Scotland. Elementary School Journal, 1957, 57, 446-51.

Scottish Council for Research in Education. The intelligence of Scottish children; a survey of an age-group. London: University of London Press, Ltd., 1933.

Scottish Council for Research in Education. Educational and other aspects of the 1947 Scottish mental survey. London: University of London Press, Ltd., 1958.

Scottish Council for Research in Education. The Scottish scholastic survey, 1953. London: University of London Press. Ltd., 1963.

Scottish Education Department. Education in Scotland in 1954. Edinburgh: Her Majesty's Stationery Office, 1955.

Scottish Education Department. Education in Scotland in 1961. Edinburgh: Her Majesty's Stationery Office, 1962.

Senders, Virginia L. Measurement and statistics. New York: Oxford University Press, 1958.

Sloop, Cornelia B., et al. Phonetic keys to reading. Indianapolis, Indiana: The Economy Company, 1952.

Soffietti, James P. Why children fail to read: a linguistic analysis. Harvard Educational Review, 1955, 25, 63-84.

Spache, George D. Toward better reading. Champaign, Illinois: Garrard Publishing Company, 1963.

Sparks, P.E., and Fay, Leo C. An evaluation of two methods of teaching reading. Elementary School Journal, 1957, 57, 386-90.

Tate, Harry L. The influence of phonics on silent reading in grade I. Elementary School Journal, 1937, 37, 752-63.

Taylor, Christian D. The effect of training on reading readiness. In Scottish Council for Research in Education. Studies in Reading, Vol. 2. London: University of London Press, Ltd., 1950, 63-80.

Underwood, Benton J., and Schulz, Rudolph W. Meaningfulness and verbal learning. New York: J.B. Lippincott Company, 1960.

Van Wie, Ethel K., and Lammers, Donald M. Are we being fair to our kindergarteners? Elementary School Journal, 1962, 62, 348-51.

Whitaker, Joseph. Almanac. London: J. Whitaker and Sons, Ltd., 1961.