THE RELATIONSHIP BETWEEN PRE-READING PATTERNS OF BEHAVIOR AND SUCCESS WITH SPECIFIC READING METHODS OF KINDERGARTEN CHILDREN

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CHAPTER I

PRESENTATION OF PROBLEM

Introduction

Children possess unique characteristics and abilities. Among these is the ability to learn. It is this uniqueness that enables one child to succeed through one pattern of learning while another child is less than successful with the same pattern of learning.

Optimum learning conditions would exist if the individual's unique characteristics and abilities were identified and were used to maximize potential learning experiences. This situation would lead to prevention of feelings of failure and negative attitudes toward education in general.

The child's success with learning to read is dependent upon his utilization of those unique abilities by which he learns most successfully. Failure results when the dictated learning patterns do not incorporate the unique abilities the child has relied on to facilitate previous learning. Beginning readers possess preferences as to patterns of learning. These preferences should be of concern to those involved with continuing learning experiences. The adaptation of reading instruction to incorporate the child's unique preference has been almost nonexistent.

In order to design learning experiences through which the child can successfully learn to read requires information about the unique

preferences of that child. However, identification is not sufficient. There must be understanding as to the relationships of specific perceptual and cognitive functions and their relationships to the beginning reading achievement.

The subject of learning preferences is in no way a new topic of concern to educators. Many have attempted to answer questions concerning the successful use of one modal approach as opposed to another in beginning reading instruction. However, the energy of modality or learning preference research is becoming more focused on an individual's modal preference as opposed to the desire to meet needs of all students by using one specific approach to learning.

That children use differential input pathways when learning is no longer just a theoretical assumption, as stated by Wepman (1971). He continues by stating a closer relationship exists between the innate capacity of the child and the modality distinction than between the distinction and any determinable environmental factor. Any lag in maturation between the two major modalities has reached a stage of equalization by age nine.

A great deal of research has been reported on the topic of the child's readiness for reading instruction. Gates and Bond (1936) reported that the optimum time of beginning reading is not entirely dependent upon the nature of the child himself, but largely dependent upon the nature of the reading program. Durkin (1966) recommends that children respond to reading at differing ages. Knowledge of individual reading readiness abilities could, according to Durrell (1958), prevent as well as eliminate unnecessary instruction and reading problems. Betts (1946) pointed out that adapting the beginning reading program

on the basis of reading readiness factors could result in the prevention of future reading difficulties. However, the teacher must be aware of these reading readiness factors possessed.

Chall (1963) reported that both the method and characteristics of the individual contributed to reading failure. Failure often results if the initial reading method does not take into consideration the set of characteristics which make it difficult for the child to associate printed symbols with their spoken counterparts. Chall concluded that both a code emphasis approach and a meaning emphasis approach produced some failure and that a heavy emphasis of one method was wrong and ineffectual for some children.

Both Harris (1964) and deHirsch (1966) reported findings that suggested the possibility of dominant learning patterns. They further indicated that the learner's particular strengths in perception, imagery, and recall should be taken advantage of when selecting instructional methods. Frostig (1969) recommended that a child's specific strengths and weaknesses be considered when determining the appropriate teaching methods for beginning reading. She suggests that the cognitive and other abilities of an individual be explored. The abilities can then be related to different task processes at various stages of development and performance, thus resulting in a more fruitful experience. The matching of ability to task process will aid in choosing the optimum method by which a particular child can learn a particular task.

Purpose of the Study

The purpose of this study was to determine if there are relationships between a variety of perceptual and conceptual tasks, and how

these tasks interact to relate with success in beginning reading. More specifically, the purpose of the study was to determine if the child who scores high on a test which indicates visual strength, for example, will also respond more successfully to a Visual-Auditory method of reading instruction. Also, if the child who scores high on a test which indicates auditory strength, for example, will he respond more successfully to an Auditory-Visual method of reading instruction. The same relationship was explored for the Linguistic and Language Experience methods of beginning reading.

It is hoped that the results of this study will contribute some information about pre-reading learning patterns and their relationships to successfully learning to read using a particular method of beginning reading instruction.

Statement of the Problem

This study was designed to determine if there is a relationship between pre-reading behavior patterns and success with the reading when differentiated methods of instruction are utilized with kindergarten children. Following the hypotheses are questions directly associated with the possible relationships between the pre-reading patterns of behavior and success with the individual methods of reading instruction.

Hypotheses

This study has been designed to test the following hypotheses.

Hypothesis I: There is no significant relationship between the scores on the pre-reading readiness variables and

reading achievement when using the Auditory-Visual method of teaching reading.

Hypothesis II: There is no significant relationship between the scores on the pre-reading readiness variables and reading achievement when using the Visual-Auditory method of teaching reading.

Hypothesis III: There is no significant relationship between the scores on the pre-reading readiness variables and reading achievement when using the Linguistic Word Structure method of teaching reading.

Hypothesis IV: There is no significant relationships between the scores on the pre-reading readiness variables and reading achievement when using the Linguistic-Language Experience method of teaching reading.

All hypotheses will be tested at the .05 level of significance.

Questions

1. In regard to the criterion variable, Auditory-Visual, will there be a significant contribution to the multiple correlation when all of the predictor variables are employed?

2. In regard to the criterion variable, Visual-Auditory, will there be a significant contribution to the multiple correlation when all of the predictor variables are employed?

3. In regard to the criterion variable, Linguistic Word Structure, will there be a significant contribution to the multiple correlation when all of the predictor variables are employed?

4. In regard to the criterion variable, Linguistic-Language Experience, will there be a significant contribution to the multiple correlation when all of the predictor variables are employed?

Definition of Terms

The following are definitions of terms as they are used throughout this study.

Auditory-Visual Method (Ray Reading Methods Test) - The Auditory-Visual method of reading instruction has the letter as the basic unit of instruction. Initially, the learner must accumulate a number of sound-symbol associations and use these in synthesizing, and thus decoding words. Skill transfer is accomplished through the use of known sound-symbol associations applied to unknown words.

Visual-Auditory Method (Ray Reading Methods Test) - The Visual-Auditory method of reading instruction has the word as the basic unit of instruction. In the initial stages of learning the configuration of a total word with pictures and verbal context clues provides the vehicle of instruction. The skill development program is dependent upon an accumulation of sight words from controlled vocabulary reading material to be utilized later in an analytical approach to decoding.

Linguistic Word Structure Method (Ray Reading Methods Test) - The Linguistic Word Structure method of reading instruction has the word pattern as the basic unit of instruction where letter names are taught and spelling patterns are accumulated. A learner generalized minimum contrast to decoding is used. Utilization of skill in early application is restricted to words having consistent spelling patterns.

Language-Experience Method (Ray Reading Methods Test) - The Language-Experience method of reading instruction utilizes the meaningful structure of the learner's own language to provide the basic unit of instruction when the oral communication patterns of the learner are recorded as stories to be visually recognized. Basic decoding skills are primarily the anticipation of language units and the context of the material written.

Pre-Reading Task - Behaviors reflecting developmental growth patterns in tasks requiring Visual Reception, Auditory Reception, Auditory-Vocal Association, Visual-Motor Association, Verbal Expression, Manual Expression, Grammatic Closure, Auditory Closure, Sound Blending, Visual Closure, Auditory-Sequential Memory, Visual Sequential Memory, and various combinations of these growth patterns.

Assumptions

For the purpose of this study, it was assumed that: (1) patterns of behavior in learning can be measured by performance on selected specific tasks, and (2) the instruments used in this study were sufficiently valid and reliable to actually measure the behaviors they are designed to measure.

Limitations of the Study

This study was limited by the population which was representative of a single school district within a semi-rural community. The sample included a predominantly middle-class population, and it covered a limited geographic area.

No attempt was made to control for any beginning reading instruction taking place either in school or at home, but all kindergarten teachers indicated that formal reading instruction had not been given. Children known by their teachers to be reading were not included in this study; however, prior knowledge of letter names and sounds was not controlled.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The search for a superior method or approach of teaching beginning reading has been the topic for abundant research studies. The results of the research vary in nature from how to begin reading instruction, when to begin, and which materials to use, to special organizational techniques which maximize instructional efficiency. With this extreme wealth of research for a resource one would expect to be able to conclude a method or approach which would meet all instructional needs of beginning readers. However, these conclusions are not possible. That one student is successful and another student less than successful when exposed to an identical reading method discounts claims as the perfect method by which to teach beginning reading.

The widespread use of reading readiness tests has resulted from research aimed at providing answers to the question of when to begin reading instruction.

Genuine usefulness and effective predictive value were found by Gates (1939) and Kottmeyer (1947) when investigating reading readiness tests and reading achievement. Furthermore, Bollings (1956) concluded that the total scores of reading readiness tests were significant in themselves for ascertaining the child's ability to learn to read.

The predictive validity of the Metropolitan Readiness Test was investigated by Mitchell (1962) who used the Metropolitan Achievement Test as the criterion measure. His findings supported the conclusion that the readiness tests were good predictors of first grade learning for all students.

Although Gates (1939) had explained that the main purpose of a reading readiness test is to reveal the pupil's status in each of the important skills involved in the early stages of reading so that achievement may be insured by giving each pupil the help he needs, Karlin (1957) found that reading readiness tests are not very valid instruments for predicting success in beginning reading.

Several studies have used the Lee-Clark Reading Readiness Test as a predictive instrument. The purpose of a study by Dobson and Hopkins (1963) was to assess the predictive validity and reliability of the Lee-Clark Reading Readiness Test. The investigators found that the validity coefficients were moderate to low, decreasing generally with each successive grade. Powell and Parsley (1961) examined some facets of relationship between scores on the Lee-Clark Reading Readiness Test which was administered at the beginning of first grade and scores from the California Reading Test given to the same students at the beginning of the second grade. The results indicated that the readiness test was useful primarily as a predictor of the Total Reading test results of the entire group.

The Murphy-Durrell Reading Readiness Tests have been used as predictive instruments for the following investigations.

Stauffer (1965) examined the predictive validity of the Metropolitan Reading Readiness Tests against the Murphy-Durrell Readiness Tests.

The results of statistical techniques employed resulted in significant correlations between the readiness test scores of the two instruments. Stauffer concluded that the readiness tests were significant predictors of reading achievement for boys.

Ward (1970) compared the predictive validity of the Murphy-Durrell Reading Readiness Test and the Coding subtest of the Wechsler Intelligence Scale for Children to the subtests of the Stanford Achievement Test. Higher correlations resulted for the Murphy-Durrell Reading Readiness Test than for the Coding subtest. Other significant correlations resulted for Word Reading, Paragraph Meaning, Spelling, Word Study Skills, and Arithmetic.

The importance of visual and auditory factors in learning to read is generally recognized more readily than any other factors. Barrett (1965) examined nine reading readiness factors for their ability to predict first grade reading achievement. Seven of the nine factors required varying degrees of visual discrimination. In reporting the results the conclusion was that an optimum combination of visual discrimination tasks would include tasks similar to Reading Letters and Numbers, Word Matching, and Pattern Copying. He also found the predictive power was increased when Pattern Copying and Word Matching measures were added to Letter Identification.

Bryan (1964) examined visual perception and intelligence in order to determine whether they were of relative importance in the reading development of primary age children. He concluded that visual perception as well as intelligence and reading readiness should be tested at the kindergarten and first grade levels.

Williams (1970) reported that kindergarten children showed no consistent cue selection during tasks which involve matching. He was attempting to determine the relationship of perception of visual form to reading.

Timko (1972) examined the delayed recognition match of trigrams of lowercase letters to one of four alternatives. The alternative chosen less often was the reversed, or mirror-image choice, which appears to produce less difficulty for beginning readers than do other types of differences in ordering of letters.

Dykstra (1966) concluded that about all that is possible in the classroom is the making of gross discriminations between each child who is likely to succeed in learning how to read and those who are likely to have difficulty in learning to read. He had conducted an investigation to show the relationship between auditory discrimination at the beginning of the first year in school and reading achievement at the end of that same year.

The relationship between reading readiness and auditory discrimination was investigated by Birch and Belmont (1966). Their findings indicated a significant correlation between test scores of auditory discrimination and reading achievement for the six-year olds.

Thompson (1936) added to the auditory discrimination and reading achievement factors with the intelligence factor. He found that auditory discrimination skills and intelligence correlated highly with the successfulness of beginning reading.

Betts (1943) stated that factors in reading readiness are inextricably interrelated and each factor carries a different weight in predicting readiness for reading with no single factor appearing as

significantly predictive of the other interrelated factors. He concluded by declaring that because of the highly complex nature of the reading process, no one factor stands out in bold relief.

In the 1930's and 1940's there appears to be an agreement about initial reading methods. Chall (1967) states that most published reading programs and textbooks for teachers agreed on the following principles: (1) the process of reading should be defined to include not only word recognition, but also comprehension and interpretation, appreciation, and application of what is read to the study of personal and social problems; (2) the child should start with meaningful reading and silent reading should be stressed from the beginning; (3) after the child has developed a sight vocabulary, he should begin to study the relationship between the sounds in spoken words and the letters representing them; (4) instruction in phonics and other means of identifying words should be spread over the six years of elementary school; (5) phonics should be integrated with the "meaningful" connected reading; (6) the words in the pupils' readers should be carefully controlled on a meaning-frequency principle; (7) all children should go through a readiness or preparatory period, and those judged not ready for formal reading instruction should have a longer one; and (8) children should be instructed in small groups selected on the basis of their achievement in reading.

These principles were based partly on theory, experiences in the classroom, some interpretation of research findings, and partly on faith and belief in the established practices. These guidelines seemed to constitute the conventional wisdom of beginning reading instruction.

When investigating most widely used basal-reading series, teacher's guides, college reading instruction to future teachers, and the practices of most classroom teachers, Austin and Morrison (1961) found that these principles were incorporated. This investigation included a time span from about 1930 to the early 1960's.

Most of the above stated principles have been questioned and refuted since the middle 50's. Due in part are the new reading programs which have been successfully introduced and adopted. Some of these new programs can be classified as concentrated supplemental programs that combine phonics skills with writing, spelling, and basal reading materials. More recently complete reading programs have put more emphasis on phonic skills and vocabulary. These programs stress earlier exposure to these two factors and a large increase in the quantity of the two.

A considerable impact has been made on beginning reading methods by linguistics - or the scientific study of the nature of language. Bloomfield (1942) reasoned that the child comes to the learning situation with a considerable command of the spoken language and should begin reading by learning the printed equivalents for his oral vocabulary. Based upon this reasoning, he questioned the initial emphasis on "meaning" and promoted learning of the "code" or "the alphabetic habit" as the first step to reading. He emphasized that since English spelling is irregular, the child should learn first those words that are spelled regularly. He argued that meaning, considered important in conventional programs, comes naturally as the code is broken.

Three states of reading, according to Fries (1962) are transfer, productive, and imaginative. The transfer stage refers to the process of transfer of the child's native language, or auditory signs, to the

new visual signs for the same signals. The second stage was the "productive stage or time when responses to the visual patterns become unconscious. The "imaginative" stage is the time when the reading process is so automatic that it is used as much as the live language to develop experiences.

The ITA is a reform for beginning instruction through the use of a modified alphabet and spelling scheme. The alphabet is changed, augmenting it to forty-four symbols to make it correspond more closely to the sounds in our language. ITA is to be used only in the beginning stages of reading instruction. Downing found significant differences favoring children trained with the ITA in the speed with which they learned to read, their levels of comprehension, the percent at various levels of achievement, and their spelling ability - all after one and one-half years of instruction in ITA compared with an equal time in a traditional method.

Much of the philosophy behind individualized reading is shared with the language-experience approach to reading. Differences in the two approaches include the emphasis of the language-experience approach for earlier acquisition of the code. This emphasis is similar to the linguistic and phonic innovations. The child's unique interests and needs are stressed with the language-experience approach. Although individualized reading stresses self-selection of reading materials, the child involved with the language-experience approach will read from his own original stories which hopefully hold a higher appeal to him. Later he is shown the relationship between sounds and letters. Each child is encouraged to proceed at his own pace, and instruction differs among individual teachers.

Allen (1965) attempted to determine whether or not the language-experience approach produced significantly different results than those obtained through the traditional basal reader approach to reading. The Stanford Achievement Test was used to measure language arts achievements. Significant differences favoring the traditional method were found in scores made by boys in all socio-economic groups on the Paragraph Meaning section, and by girls in the middle socio-economic groups. There were no significant differences in word meaning, or in vocabulary. Boys from the low socio-economic groups showed significantly higher interest in reading after having been in the language-experience approach. Although this study has produced interest and a number of followers since its introduction, it does not support the superiority of the language-experience approach to beginning reading.

Modality Studies Specially Focused on Reading

Bateman (1968) investigated the effectiveness of visual and auditory approaches in initial reading instruction for 182 kindergarten children. All eight classes received the Detroit Group Intelligence Scale and the Metropolitan Reading Readiness Test. Four of the classes were given the Illinois Test of Psycholinguistic Abilities (ITPA) in order to separate the children into auditory and visual preference groups. One half of the students were taught with an auditory method, while the other half was taught with a visual method. The same treatment was given the two visual groups.

The auditory learners made significantly greater gains than did the visual learners. The auditory method produced superior reading and spelling achievement when compared with the visual method. No

significant interaction between modal preference and instructional methods was found.

Robinson (1968) grouped 448 first grade pupils into high and low auditory and visual groups according to their performance on Wepman's Auditory Discrimination Test and three visual discrimination tests. Basal readers were used to present the sight approach and Hay-Wingo materials were used to present the phonic approach. Results of the Metropolitan Achievement Tests and the Gray Oral Reading Test indicated no significant differences between pupils in the high visual-high auditory, high visual-low auditory, or low visual-low auditory groups. The low visual-high auditory groups taught by the phonic method demonstrated greater silent reading achievement at the end of the first grade.

Mills (1955), in an attempt to help teachers determine the learning method best suited to the child, developed a Learning Methods Test. His purpose was to match a learning method for word recognition to various types of individuals. For his study, a population of 58 subjects was divided into nine classifications determined by age and intelligence levels. Both the age and level of intelligence characteristics proved to be unsatisfactory variables with which to match a learning method. Conclusions yielded that no one method was best for all children of a particular age or intelligence level.

Although not statistically superior to other methods, the kinesthetic method was found to be the best method for children of low intelligence (I.Q. of 65-80). Also, for this intelligence level group, the phonic method was least effective. Children of average I.Q. (85-100) showed a preference for the combination of visual methods. The

kinesthetic method was least effective for this same group. For children of high intelligence (105-120), learning method was not a factor in their ability to learn words. Another conclusion of the study was that the higher the intelligence, the more readily the child learned words.

When the students were divided according to age, the eight-year olds showed a preference for the visual method; and no method proved to be outstandingly effective for the nine-year olds. Mills further suggested that research should concentrate on determining which method is best for which children rather than developing a best method to teach all the children.

Mills' Learning Methods Test was used later by Coleman (1962) to determine which method (visual, auditory, kinesthetic) or combinations of methods was more efficient in a total group, sub-group, or individual level. Fifty-one students were used and the results were as follows: (1) underachievers, as a group, learned as efficiently by one method as by another; (2) severe underachievers learned best by the visual and combination methods, and mild underachievers learned best by the visual method; (3) based on I.Q., the average and high I.Q. students favored the visual and combination methods, and the low I.Q. students (below 90) favored the kinesthetic method. The method least effective was the kinesthetic for the average and high I.Q. group and phonic for the low I.Q. group; (4) age was not a significant factor related to learning method; and (5) different students learned more efficiently by different methods.

No particular method was significantly superior for all subjects of sub-groups of underachievers with respect to age, I.Q., or degree of

underachievement. However, all groups showed a tendency favoring the visual and combination method. Coleman did agree with Mills that the ascertaining of a student's preference for a given learning method would be of value in teaching him in either a developmental or remedial program.

McCarthy (1971) examined the effect of selected patterns of visual and auditory memory abilities on kindergarteners' word recognition success under the Auditory-Visual and the Visual-Auditory methods of teaching reading and found that teaching sound-letter correspondence and phonic-blending enhanced any instruction that followed. He followed the procedures for teaching the two methods as outlined in the Ray Reading Methods Test and concluded that there was no significant difference between groups having selected patterns of memory abilities on recall measures with the Visual-Auditory or the Auditory-Visual method.

In the study of deHirsch, Jansky, and Langford (1966) 53 kindergarten children were given four tests of visual perception (Bender-Gestalt Visual Motor Test, Horst, Gates Matching, and Word Recognition Tests) and four tests related to auditory perception (Imitation of Tapped Patterns, Auditory Discrimination, Language Comprehension, and the Gates Rhyming Test). Ten of the children indicated a strong modal preference; seven responded better on the auditory test than on the visual tests; three performed significantly better on the visual tests. The three children preferring the visual methods and five of the subjects preferring the auditory method passed all of the reading tests given at the end of the second grade. The two subjects who did not

pass these tests were unsuccessful on all of the reading tests. The study was not controlled for different methodologies or teachers.

Ringler, Smith, and Cullinan (1971) used the New York University Modality Test (1968) in determining the learning preferences (auditory, visual, kinesthetic, or no preference) of 128 first grade children. Thirty-seven had no preference; 33 children demonstrated a visual preference; 30 children an auditory preference; 28 children a kinesthetic preference. Subjects within each modality group were randomly assigned either one of the four controlled or experimental groups. The experimental groups were labeled auditory, visual, kinesthetic, and combination. The learning task for each of the experimental groups included a list of 50 vocabulary words identified as part of the children's speaking vocabulary, but not formally taught in the classroom. Subjects in the experimental groups received seven and one-half hours of small-group instruction, including differentiated presentation of the 50 words and oral reading of sentences and paragraphs containing the words. The control group did not receive any instruction involving the list of words. All subjects continued to receive developmental reading instruction using the Bank Street Readers. A criterion test consisting of the vocabulary list of 50 words plus an additional 150 words, which served as distractors, was used as the pre-test and post-test measure of vocabulary development.

Statistical analysis indicated the experimental groups made significantly greater gains than did the control group, but did not differ significantly from each other. No significant differences were found among modality preference groups when treatment groups were not considered. Pupils who were taught using their preferred mode did not

make significantly greater gains than those pupils who received instruction through some mode other than their preferred one.

Harris (1964) investigated learning aptitude as a measure by which to individualize first grade reading instruction. The three methods of reading utilized were: visual, auditory, and the kinesthetic approaches. Harris reported that no significant association could be established with either the specific method of teaching used or the presence of presumed attitude for that method.

Jones (1970), using the McKee's alphabet for pictures of concrete objects, explored the relationships among modal preference and two measures of reading achievement with 90 third grade pupils. The subjects were required to learn strange auditory syllables and strange visual labels. The modal preference was established by subtracting the score on the visual task from the score on the auditory task. There was not a significant correlation between the modal preference score and sight vocabulary or reading comprehension as measured by the Metropolitan Reading Test. Although perfect scores were recorded by 25 percent of the subjects on the auditory labeling test and 22 percent on the visual labeling test, the part of the study dealing with modal preference was weak due to the strong ceiling effect of the modal preference test.

Bursuk (1971) investigated the relative effectiveness of combined aural-visual and primarily visual teaching approaches in terms of the interaction with the various sensory modality preferences of adolescent retarded readers. A significant interaction was found between sensory modality learning preferences and the effectiveness of the teaching approach used. The aural-visual approach was more effective in

increasing the reading comprehension of auditory learners and pupils with no sensory modality learning preference than it was in improving the same for auditory learners and those pupils with no modality preference.

Summary

Inconclusive evidence is presented as to significant relationships between modal preference and beginning reading achievement. This is not due to a limited amount of research in the area of modal preference for learning.

The studies of Bateman, Coleman, Ringler, and Robinson, et al., resulted in similar conclusions. The results of all four studies indicated no significant gains between students using their preferred mode of learning and those not using their preferred mode of learning. No significance was found between modal preference and memory patterns or abilities by McCarthy.

Both Bursuk and Mills reported significant interaction between students' modal preference and the effectiveness of the sensory teaching approach used. They are both supportive of using preferred modes and believe that different children learn by different reading instruction methods.

CHAPTER III

METHOD AND PROCEDURE

Sample and Population

The subjects for this study were all kindergarten students enrolled during the 1974-75 academic year in the public schools of a semi-rural community in North Central Oklahoma. This community was characterized as a predominantly white, middle-class, semi-rural community with a 1970 population of approximately 8,700 people. The census data also indicated 94 percent Caucasian residents and 6 percent "other" residents comprised the total population. All of the "other" residents were of American Indian or Mexican American extraction.

There were approximately 1,870 children attending the local schools of which the kindergarten population numbered 117 children. The kindergarten children attended four neighborhood schools. There were three morning and two afternoon sessions. There were three kindergarten teachers with an average class size of 23 children. All the children were assigned on the basis of age. In order to be eligible for kindergarten, it was necessary for a child to have been five years of age by November 1st of the current school year.

The following criteria were met by all students included as subjects for the sample population of this study:

1. Attending kindergarten for the first time and at least five years of age at the time of testing.

2. Evaluated as a non-reader by the classroom teacher.

3. Categorized as functioning not below a normal range of intelligence.

4. Evaluated as being free of gross visual, speech, and/or hearing disabilities.

5. Maintaining perfect attendance for four consecutive weeks during administration of the Ray Reading Methods Test.

6. Parental permission granted to this investigator to administer the below mentioned instruments.

Upon meeting the above criteria, the sample population totaled 66 kindergarten students. Of this total, there were 37 females and 29 males.

Testing Procedure

The following tests were administered by qualified examiners to the sample population between the dates of January 1, 1975, and March 1, 1975:

1. Visual Memory of Words - Primary, Durrell Analysis of Reading Difficulty (DARD), Donald E. Durrell, 1955.

2. Illinois Test of Psycholinguistic Abilities (ITPA), McCarthy and Kirk, 1968 revision.

3. Metropolitan Readiness Tests (MRT), Form A, Hildreth, Griffiths, and McGauvran, 1965.

4. Peabody Picture Vocabulary Test (PPVT), Form B, Lloyd M. Dunn, 1965.

5. Ray Reading Methods Test (RRMT), Experimental Form, Darrel D. Ray, 1970.

6. Digit Span Subtest, Wechsler Intelligence Scale for Children (WISC), David Wechsler, 1949.

7. Wechsler Preschool and Primary Scale of Intelligence (WPPSI), David Wechsler, 1949.

For the individually administered tests, Visual Memory of Words - Primary (DARD), Illinois Test of Psycholinguistic Abilities, Peabody Picture Vocabulary Test, Digit Span Subtest (WISC), and Wechsler Preschool and Primary Scale of Intelligence, the subjects were removed from the classroom. These individual tests were administered in rooms relatively free of distraction by qualified persons. The Metropolitan Readiness Test was administered to randomly selected groups of not more than 17 subjects. The groups remained in their classroom during the two testing sessions which were necessary to complete this test.

The administrators of the Ray Reading Methods Test (RRMT) were this writer and a doctoral colleague who was involved in a companion study. These teaching sessions extended continuously from February to the first of March with no interruptions other than unforeseen inclement weather. The teaching formats employed were the same as the procedures described in the manual of directions for the Ray Reading Methods Test.

The procedures were followed with the exception of several modifications. On the Visual-Auditory portion, large flash cards were used with three inch high letters instead of the small three-by-five cards that were provided in the kit. This modification was made to make the cards clearly visible to all children at three feet. The same procedure was followed with cards used with the other methods of the test.

The pre-instructional check session of 20 minutes was followed. The instructional sessions and interim sessions were scheduled so as not

to interfere with recess and music periods of the children. All of the checking (recall) sessions were done individually with the other children away from the child being checked.

Instrumentation

Illinois Test of Psycholinguistic Abilities (1968 Revision)

The Illinois Test of Psycholinguistic Abilities (ITPA) is an individually administered diagnostic test of psychological and linguistic functioning that is based on Osgood's (1957) theoretical model of the communication process. The recent experimental edition contains 12 subtests of which six are at the representational level and six are at the automatic level. Standardization of the test was done on "average" children ages two to ten years of age selected from middle socioeconomic levels in the Midwest and predominantly Caucasian race.

Paraskevopoulos and Kirk (1969) have reported that the internal consistency coefficients were .87 for the composite ITPA in the five years, seven months to six years, one month age group of the normative group. Stability reliability of selected age ranges over five months time have indicated relatively equal pre-test and post-test scores with a stability coefficient of .70.

Since the ITPA by its nature is a clinical instrument that measures the child's psycholinguistic functioning in several areas, it possesses what might be termed "content" validity. The most appropriate validity study would probably be a longitudinal validation study consisting of clinical case studies over a period of time. Kirk and Bateman (1962)

are among recent authors who have presented data on the clinical usefulness of the ITPA.

For the purpose of this study, all 12 subtests of the ITPA were utilized. The following are functions tested at the representational level:

A. The Receptive Process (Decoding) - ability to comprehend visual and auditory symbols.

Test 1, Auditory Reception - assesses the ability to derive meaning from verbally presented material. The child is asked to respond "yes" or "no" to sentences containing an increasingly difficult level of vocabulary.

Test 2, Visual Reception - assesses the ability to derive meaning from visual symbols. The child is shown a stimulus picture. Then a page of response pictures are shown from which the child must choose the object or situation which is conceptually similar to the stimulus.

B. The Organizing Process (Association) - ability to relate, organize, and manipulate visual or auditory symbols in a meaningful way.

Test 3, Auditory-Vocal Association - assesses the child's ability to relate concepts presented orally. A statement is presented to the child followed by an analogous statement to be completed by the child.

Test 4, Visual Motor Association - assesses the child's ability to relate concepts presented visually. The child is presented with a single stimulus picture surrounded by four optional pictures, one of which is associated with the stimulus picture. The child is to select the one picture which is most closely related to the stimulus picture. At the upper levels the test provides visual analogies.

C. The Expressive Process (Encoding) - assesses the child's ability to use verbal or manual symbols to transmit an idea.

Test 5, Verbal Expression - assesses the ability of the child to express his own concepts vocally. The child is shown four familiar objects, one at a time, and is asked to tell all he can about the particular object.

Test 6, Manual Expression - assesses the child's ability to express ideas manually. A common object is shown and named for the child, and he is asked to pantomime the appropriate action associated with its use.

The following are functions tested at the automatic level:

A. Closure - assesses the child's ability to fill in the missing parts in an incomplete picture or verbal expression. In other words, the ability to integrate discrete units into a whole.

Test 7, Grammatic Closure - assesses the child's ability to make use of the redundancies of oral language in acquiring automatic habits for handling syntax and grammatic inflections. The child is asked to respond automatically to often repeated verbal expressions of standard American speech.

Test 8, Auditory Closure (supplementary) - assesses the child's ability to fill in missing parts which are deleted in auditory presentation and to produce a complete word.

Test 9, Sound Blending (supplementary) - assesses the organizing process at the automatic level in the auditory-vocal channel. The sounds of a word are spoken singly at half-second intervals and the child is asked to tell what the word is. The child must synthesize the separate parts of the word and produce an integrated whole.

Test 10, Visual Closure - assesses the child's ability to identify a common object from an incomplete visual presentation. Four scenes, presented separately, in which 14 or 15 examples of a specified object appear are shown to the child. The objects are seen in varying degrees of concealment. The child is asked to see how quickly he can point to all examples within a 30 second time limit.

B. Sequential Memory - assesses the child's ability to reproduce from short term memory a sequence of auditory or visual stimuli.

Test 11, Auditory Sequential Memory - assesses the child's ability to reproduce from memory sequences of digits increasing in length from two to eight digits. The digits are presented at a rate of two per second, and the child is allowed a second trial.

Test 12, Visual-Sequential Memory - assesses the child's ability to reproduce sequences of non-meaningful figures from memory. The child is shown each sequence of figures for five seconds and then asked to reproduce the figure. Again, he is allowed two trials when the first attempt is unsuccessful. The sequences increase in length from two to eight figures.

Metropolitan Readiness Tests, Form A (1965)

The Metropolitan Readiness Test (MRT) was designed to measure the extent to which school beginners have developed in the skills and abilities which contribute to readiness for reading. It is designed to test pupils during the kindergarten year or the beginning of first grade. The purpose of the test is not to measure the effectiveness of kindergarten, but rather serve as a basis for classification of students. The six subtests which make up this test are:

Test 1, Word Meaning - a 16 item picture vocabulary test. The child selects from three pictures the one that illustrates the word the examiner names.

Test 2, Listening - a 16 item test of ability to comprehend phrases and sentences instead of individual words. The pupil selects from three pictures the one which portrays a situation or event the examiner describes briefly.

Test 3, Matching - a 14 item test of visual perception involving the recognition of similarities. The pupil marks one of the three pictures which matches a given picture.

Test 4, Alphabet - a 16 item test of ability to recognize lower-case letters of the alphabet. The pupil chooses a letter named from four alternatives.

Test 5, Numbers - a 26 item test of number knowledge. The pupil selects from three pictures the one which denotes size, time, and other number concepts.

Test 6, Copying - a 14 item test which measures a combination of visual perception and motor control. The pupil reproduces a number of designs independently from a number of given designs.

Wechsler Preschool and Primary Scale of Intelligence (1967)

The Wechsler Preschool and Primary Scale of Intelligence (WPPSI) consists of 12 subtests which, like the WISC and adult scales, are divided into two sub-groups identified as Verbal and Performance. Most of the Verbal tests correlate better with each other than with tests of the performance group, and vice versa. But, while the tests identified

as verbal and performance differ as these labels indicate, they each tap other factors, among them non-intellective ones, which cut across the groups to produce other classifications or categories that are equally important to consider in evaluating the individual's performance.

The WPPSI is administered with the Verbal and Performance tests intermixed. The varying of the tasks is used to maintain the young child's interest and cooperation.

Information: Subject responds orally to questions, covering a wide range of factual information, read to him by the examiner.

Measures background of general information; memory development and functioning; "intellectual ambitiousness." Reflects educational and cultural environment and background. Score will suffer from educational and cultural deprivation.

Vocabulary: Word definitions. The examiner gives oral stimulus and subject responds orally.

Measures many of same mental processes that are measured by information and similarities. Serves to suggest level of auditory comprehension.

Arithmetic: Cards printed with pictures of various objects were added to the beginning of test. Test does not require any reading.

Measures basic quantitative concepts without involving the explicit use of numbers. Also measures

powers of reasoning, concentration, and attention. Reflects reaction to time pressure.

Similarities: Oral responses identifying similar properties of paired words.

Measures logical thought processes, intellectual maturity; ability to handle abstract ideas, to see relationships, to form concepts, and to generalize.

Comprehension: Questions and answers dealing with practical, everyday situations.

Measures practical common sense; good judgment; understanding of everyday social situations; acceptance of conventional standards of behavior; stable emotional balance.

Sentences: Task of repeating sentences given orally by the examiner. Credit is given for partial recall.

Measures background of general knowledge. Also looks at the memory development and functioning of the child, and serves to suggest level of auditory comprehension.

Animal House: Subject is asked to associate colors with picture stimulus. Time element is involved.

Measures the child's ability to associate sign with symbol and may be considered as a measure of learning ability. Furnishes clues to subject's ability to use left-to-right progression in reading and writing. Involves visual perception, visual-motor coordination, no verbalization.

Picture Completion: Subject shows or tells examiner what part of a picture is missing.

Measures alertness to environment; ability to note detail and to distinguish essential from non-essential detail. Involves visual perception; minimum of verbalization.

Mazes: Child is asked to use motor skills on both a horizontal maze and a center spiral maze.

Measures the visual perception, visual-motor coordination, and no verbalization of the child. Furnishes clues to subject's ability to use left-to-right progression in reading.

Geometric Design: Subject is presented with a stimulus picture of geometric design and is asked to reproduce the design with a pencil.

Measures the child's ability to reproduce geometric figures and looks at the visual-motor organization and calls attention to behavioral lags of the child.

Block Design: Subject is presented with a stimulus of a flat block and is asked to identify not only forms, but colors before assembling the blocks into a pattern.

Measures ability to analyze, to synthesize, and to copy, using abstract designs as patterns, involves visual perception, visual-motor coordination, and no verbalization.

The tests of the scale are grouped as follows: Verbal - Information, Vocabulary, Arithmetic, Similarities, Comprehension, and Sentences (supplementary); Performance - Animal House, Picture Completion, Mazes, Geometric Design, and Block Design.

Visual Memory of Words - Primary, Durrell Analysis of Reading Difficulty (1955)

The Visual Memory of Words - Primary Subtest assesses the child's ability to match a letter or word shown to him with the corresponding letter or word which appears among a group of similar configurations.

Digit Span Subtest, Wechsler Intelligence Scale for Children (1949)

The Digit Span Subtest assesses the child's ability to immediately recall a series of digits given verbally. They increase in number of digits given. Also, the ability to immediately recall a series of digits backwords is measured.

Peabody Picture Vocabulary Test, Form B (1965)

The Peabody Picture Vocabulary Test (PPVT) developed by Dunn (1959) was used to obtain an estimate of the intellectual potential of the kindergarten subjects. The PPVT is individually administered test of hearing vocabulary or receptive word knowledge that was designed to predict school success of a standardization sample involving the ages two to eighteen years inclusive. The test itself requires the subject to identify the pictorial equivalent of a word given by the examiner

from a group of four responses. It is easy to administer and score and usually takes about ten to fifteen minutes to complete.

In congruent validity studies the PPVT was compared to both the Stanford-Binet (SB) and the Wechsler Intelligence Scale for Children (WISC). These findings were abstracted and provided in the test manual. Correlations with the 1960 Stanford-Binet were .83. Through correlational analyses, O'Connor, Shatwell, Galitt, and Ringman (1969) found the relation between the PPVT and SB were relatively strong.

Two studies in the manual show positive but low correlations with success in school. However, both studies involved children at the beginning stages of reading. Dunn concluded that probably visual discrimination and other factors are more important than hearing vocabulary in predicting school success at this age, and it is suggested that the PPVT might be a better predictor for older children. However, no data are presented to support this contention.

The reliability data report alternate form reliability coefficients for raw scores ranging from a low of .67 at the six year level to a high of .84 at the seventeen and eighteen year level with a median of .77. The standard error of measurement for I.Q. scores was 7.2. In view of the above data and research, it appears the PPVT is a valid and reliable measure of verbal intelligence that provides an efficient, practical instrument to screen a large number of children on an individual basis.

Ray Reading Methods Test (Experimental Edition)

The Ray Reading Methods Test (RRMT), Experimental Edition, was developed to provide the teacher and/or clinician with a technique of

evaluating the preferred learning method(s) of children in the process of beginning to read (Ray, 1970). These methods are Visual-Auditory, Auditory-Visual, Linguistic-Word Structure, and Language-Experience. The purpose of the test is the selection of a suitable method of instruction based upon the learner's demonstration of a preference in the selection of recognition cues. The test is designed to be used with individuals or small groups consisting of six or less individuals. Basically, the procedure consists of a series of lessons accompanied by testing. Ten words are taught in two instructional periods for each method with a succession of post-tests administered following each instructional period to measure the retention of the words which will be taught. Following are the four subtests with their accompanying descriptions:

Test 1, Visual-Auditory - a ten item test based on the whole word unit of instruction utilizing visual (configuration, picture) and contextual clues emphasizing word meaning in isolation and in context. The ten words will be presented in a story context utilizing story booklets with pictures, flash cards, and a chalkboard to draw attention to configuration clues. The story will be read silently and orally with appropriate discussion. The words - look, see, Jack, run, play - will be taught in the first instructional period and the words - come, said, Fluffy, and, ride - will be taught in the second instructional period.

Test 2, Auditory-Visual - a ten item test based on the phoneme-grapheme unit of instruction with specific blending instruction. The consonant sounds of "m", "t", "b", and the short vowel sounds of "a" and "e" will be taught in the first instructional period. After mastery, the sounds will be synthesized into the words - mat, bat, mob,

tot, tam - with no emphasis on meaning. During the second instructional period, the silent e will be introduced and the rule explained using the long sounds of "a" and "o" in the following words: mate, bate, mobe, tote, and tame.

Test 3, Linguistic-Word Structure - a ten item test based on the spelling pattern unit of instruction utilizing consistent and contrasting spelling patterns. The letter names - d, f, p, n, m, a, i - will be taught the first instructional period. After mastery, the letter names will be presented in the words - din, fin, pin, pan, man - by spelling the words while pointing to each letter. During the second instructional period the letter "e" will be introduced and the words - fine, dine, pine, pane, mane - will be taught using the same procedure as the first instructional period.

Test 4, Language-Experience - a ten item test based on the sentence unit of instruction utilizing the language of the subjects. A toy horse will be presented, described, named, and/or manipulated. A story of no more than four simple sentences will be developed using the language of the subjects during the first instructional period. The story will be recorded on the chalkboard or a chart. Five words will be selected from the story to be learned and will be taught in context. The use of verbal clues and matching sentences, phrases, and words will also be part of the instruction. After mastery, the words will be presented in isolation. The same procedure will be followed during the second instructional period using the previous story and adding four additional sentences.

Each student will respond to four delayed recall scores, one for each method. If all methods are equally effective in teaching the child, then all the scores will be the same.

Statistical Analysis

The statistical analysis was performed at the Oklahoma State University Computer Center. Several different treatments of the data yielded the information for the study.

The first statistical technique used was the Pearson product-moment correlation. The significance of the differences between the readiness tests and method tests score correlations was tested by Fisher's Z. The formula for Pearson product-moment correlation is:

$$r = \frac{N\sum XY - (\sum X)(\sum Y)}{\left[N\sum X^2 - (\sum X)^2\right]\left[N\sum Y^2 - (\sum Y)^2\right]}.$$

The second technique used was multiple correlation. This technique allowed the identification of the optimum combinations of predictor variables and their unique contribution to the multiple correlation. The formula for the multiple correlation technique is as follows:

$$R = B_1 r_1 + B_2 r_2 + \ldots B_n r_n$$

Where: R = Multiple correlation coefficient
B_1 = Beta weight for predictor #1
r_1 = Pearson product-moment between predictor #1 and dependent variable.

Further explanation of multiple correlation is necessary. The amount of variance in the criterion variable that can be accounted for

by the combined variables represented in the multiple correlation can be determined by squaring the multiple correlation coefficient (R). The R^2 represents the variance in the criterion variable accounted for by the combination of predictor variables in the particular multiple correlation.

The stepwise procedure starts with the simple correlation matrix and enters into regression the variables most highly correlated with the criterion variable. Each remaining predictor is added to the regression one at a time. An analysis of variance is used to determine if each added predictor added anything to the total efficiency of the regression equation. If a statistically significant contribution is made by each added predictor, the variable becomes a part of the multiple correlation. If nothing significant was added, the predictor variable was rejected from the multiple correlation. The contribution of the variables to the multiple R was determined with the following formula:

$$F = \frac{R^2 / k}{(1 - R^2) / (N - k - 1)}$$

Where: k = included predictor variables
R^2 = squared multiple correlation
N = number of subjects.

CHAPTER IV

ANALYSIS OF THE DATA

Introduction

The major purpose of this study was to identify and determine the effects of selected patterns of pre-reading abilities of kindergarteners' word recognition success under four methods of teaching beginning reading. Analysis of the data was based upon the degree of the relationships obtained between a score that the child received on each of the predictor variables and each of the scores that the same child received on each of the four reading methods.

The findings will be presented in three sections: the tests of the four hypotheses, results of the multiple correlation, and a discussion of groupings of the predictor variables.

Results Related to Hypothesis I and Question I

Hypothesis I: There is no significant relationship between the scores on the pre-reading readiness variables and reading achievement when using the Auditory-Visual method of teaching reading.

Correlations of the pre-reading readiness variables and the criterion variable, Auditory-Visual, are presented in Table I. All of the predictor variables except Visual Memory (ITPA), Auditory Memory,

TABLE I

RESULTS OF CORRELATIONS OF READINESS VARIABLES WITH THE AUDITORY-VISUAL METHOD

Readiness Variable	Correlation Coefficient Auditory-Visual Method
Auditory Reception	0.365
Visual Reception	0.343
Visual Memory	0.261
Auditory Association	0.565
Auditory Memory	0.273
Visual Association	0.475
Visual Closure	0.304
Verbal Expression	0.382
Grammatic Closure	0.583
Manual Expression	0.250
Auditory Closure	0.365
Sound Blending	0.570
Information	0.468
Vocabulary	0.566
Arithmetic	0.478
Similarities	0.494
Comprehension	0.477
Sentences	0.504
Animal House	0.338
Picture Completion	0.415
Mazes	0.389
Geometric Design	0.361
Block Design	0.374
Digit Span	0.501
Receptive Vocabulary	0.375
Visual Memory	0.457
Word Meaning	0.471
Listening	0.404
Matching	0.155
Alphabet	0.533
Numbers	0.521
Copying	0.311

.303 indicates critical value at .01 level of confidence.
.232 indicates critical value at .05 level of confidence.

Manual Expression, and Matching were significantly correlated to the Auditory-Visual method at the .01 level of confidence. The above named variables were, however, significant at the .05 level of confidence, with the exception of the Matching variable. For the criterion variable, Auditory-Visual, .232 indicates the .05 level of significance and .303 indicates the .01 level of significance.

Hypothesis I will be rejected for the pre-reading readiness variables except Matching.

Question I: In regard to the criterion variable, Auditory-Visual, will there be a significant contribution to the multiple correlation when all of the predictor variables are used in the correlation?

In the stepwise multiple regression of 32 predictor variables, all 32 added to the multiple correlation. The predictor variables which contributed significantly to the multiple correlation are presented in Table II. Of major importance is the fact that the predictor variables were added to the equation beginning with the variable that accounted for the greatest amoung of unique variance in the criterion variable. The last predictor added contributed least to the multiple correlation coefficient.

Of these 32 included variables, some added very little. In order to determine the ones contributing the most to the multiple R, an F-test was done. For the criterion variable, Auditory-Visual, a .05 level of significance for F value was determined to be 3.843.

The predictor variables were then grouped to determine which ones were accounting for the greatest degree of variance in the computed correlations. Table III presents the groupings of the significant

TABLE II

RESULTS OF THE STEPWISE CORRELATION FOR AUDITORY-VISUAL METHOD

Readiness Variable	Multiple R	Multiple R^2	F Ratio
Grammatic Closure	.5826	.3394	32.8870*
Vocabulary	.6733	.4534	13.1296*
Visual Association	.7215	.5205	8.6810*
Numbers	.7508	.5636	6.0293*
Sound Blending	.7703	.5933	4.3808*
Receptive Vocabulary	.7807	.5933	4.3808*
Alphabet	.7901	.6243	2.2743*
Auditory Reception	.8016	.6426	2.9264*
Matching	.8116	.6587	2.6331*
Geometric Design	.8175	.6684	1.6098
Sentences	.8225	.6765	1.3636
Auditory Closure	.8255	.6815	.8169
Auditory Association	.8287	.6868	.8906
Visual Reception	.8328	.6936	1.1303
Arithmetic	.8369	.7003	1.1248
Visual Memory (DARD)	.8404	.7063	.9954
Visual Memory (ITPA)	.8434	.7113	.8282
Verbal Expression	.8478	.7188	1.2594
Copying	.8552	.7314	2.1582
Information	.8588	.7375	1.0479
Comprehension	.8644	.7471	1.6716
Picture Completion	.8695	.7561	1.5788
Similarities	.8744	.7646	1.5200
Auditory Memory	.8789	.7724	1.4030
Word Meaning	.8846	.7826	1.8657
Digit Span	.8861	.7853	.4905
Mazes	.8867	.7862	.1689
Animal House	.8871	.7870	.1353
Block Design	.8874	.7874	.0754
Manual Expression	.8876	.7879	.0772
Listening	.8878	.7882	.0557
Visual Closure	.8879	.7883	.0138

* Significant at the .05 level of confidence.

predictor variables with the percentage and amount of variance as it significantly contributed to the multiple R.

TABLE III

SUMMARY OF SIGNIFICANT PREDICTORS
FOR AUDITORY-VISUAL METHOD

Significant Predictor	Increase in R^2	Percentage of Explained Variation
Grammatic Closure	0.3394	43%
Vocabulary	0.1139	14%
Visual Association	0.0671	9%
Numbers	0.0431	5%
Sound Blending	0.0297	4%
Receptive Vocabulary	0.0162	2%
Alphabet	0.0147	2%
Auditory Reception	0.0183	2%
Matching	0.0160	2%
		Total 83%

The significance of the contribution to the multiple R was determined for each particular variable. With the Auditory-Visual method of teaching reading as the criterion variable, significant predictor variables were: Grammatic Closure, Vocabulary, Visual Association, Numbers, Sound Blending, Receptive Vocabulary, Alphabet, Auditory Reception, and

Matching. These predictor variables accounted for 83 percent of the explained variation, which was .9444.

Results Related to Hypothesis II and Question II

Hypothesis II: There is no significant relationship between the scores on the pre-reading readiness variables and reading achievement when using the Visual-Auditory method of teaching reading.

Correlation of the pre-reading readiness variables and the criterion variable, Visual-Auditory, are presented in Table IV. All of the predictor variables, with the exception of Auditory Memory, Visual Closure, Listening, and Matching were significant at the .01 level of confidence. The above named variables were, however, significant at the .05 level of confidence with the exception of Visual Closure. For the criterion variable, Visual-Auditory, .232 indicates the .05 level of significance and .303 indicates the .01 level of significance.

Hypothesis II will be rejected for all the pre-reading readiness variables except Visual Closure.

Question II: In regard to the criterion variable, Visual-Auditory, will there be a significant contribution to the multiple correlation when all of the predictor variables are used in the correlation?

In the stepwise multiple regression, 29 of the 32 predictor variables added to the multiple correlation. However, the three subtests Manual Expression, Auditory Closure, and Arithmetic added nothing of significance and were, therefore, not included in the multiple

TABLE IV

RESULTS OF CORRELATIONS OF READINESS VARIABLES WITH THE VISUAL-AUDITORY METHOD

Readiness Variable	Correlation Coefficient Visual-Auditory Method
Auditory Reception	0.404
Visual Reception	0.378
Visual Memory	0.378
Auditory Association	0.579
Auditory Memory	0.298
Visual Association	0.301
Visual Closure	0.193
Verbal Expression	0.410
Grammatic Closure	0.446
Manual Expression	0.312
Auditory Closure	0.346
Sound Blending	0.521
Information	0.393
Vocabulary	0.471
Arithmetic	0.395
Similarities	0.479
Comprehension	0.439
Sentences	0.429
Animal House	0.399
Picture Completion	0.325
Mazes	0.308
Geometric Design	0.543
Block Design	0.360
Digit Span	0.515
Receptive Vocabulary	0.401
Visual Memory	0.504
Word Meaning	0.591
Listening	0.237
Matching	0.256
Alphabet	0.647
Numbers	0.543
Copying	0.462

.303 indicates critical value at .01 level of confidence.
.232 indicates critical value at .05 level of confidence.

correlation. Of the 29 predictor variables included, some variables contributed very little to the multiple R. In order to determine the variables contributing the most, an F-test was used. For the criterion variable, Visual-Auditory, a .05 level of significance for F value was determined to be 4.311.

The predictor variables which contributed significantly to the multiple correlation are presented in Table V. Of major importance is the fact that the predictor variables were added to the equation beginning with the variable that accounted for the greatest amount of unique variance in the criterion variable.

The predictor variables were then grouped to determine which ones were accounting for the greatest degree of variance in the computed correlations. Table VI presents the groupings of the significant predictor variables with the percentages and amount of variance as it significantly contributed to the multiple R.

With the Visual-Auditory method of teaching reading as the criterion variable, significant predictor variables were: Alphabet, Geometric Design, Word Meaning, Visual Memory (DARD), Visual Closure, Similarities, and Auditory Reception. These predictor variables accounted for 86 percent of the explained variation, which is .8834.

TABLE V

RESULTS OF THE STEPWISE CORRELATION FOR VISUAL-AUDITORY METHOD

Readiness Variable	Multiple R	Multiple R^2	F Ratio
Alphabet	.6467	.4183	46.0182*
Geometric Design	.7198	.5182	13.0593*
Word Meaning	.7667	.5873	10.4769*
Visual Memory (DARD)	.7827	.6126	3.9002*
Visual Association	.7912	.6260	2.1511
Visual Closure	.8016	.6426	2.7368*
Information	.8096	.6554	2.1659
Similarities	.8231	.6775	3.8929*
Listening	.8299	.6887	2.0274
Numbers	.8359	.6988	1.8376
Auditory Reception	.8425	.7098	2.0565*
Auditory Association	.8449	.7138	.7358
Verbal Expression	.8470	.7175	.6727
Digit Span	.8494	.7215	.7457
Picture Completion	.8528	.7273	1.0537
Visual Memory (ITPA)	.8548	.7307	.6263
Copying	.8585	.7370	1.1506
Block Design	.8614	.7421	.9136
Mazes	.8641	.7467	.8350
Sentences	.8657	.7495	.5068
Animal House	.8675	.7526	.5527
Receptive Vocabulary	.8702	.7572	.8111
Visual Reception	.8714	.7594	.3941
Sound Blending	.8726	.7615	.3504
Auditory Memory	.8735	.7630	.2660
Comprehension	.8739	.7638	.1234
Matching	.8743	.7644	.1038
Vocabulary	.8744	.7646	.0337
Grammatic Closure	.8745	.7648	.0180

* Significant at .05 level of confidence.

TABLE VI

SUMMARY OF SIGNIFICANT PREDICTORS
FOR VISUAL-AUDITORY METHOD

Significant Predictor	Increase in R^2	Percentage of Explained Variation
Alphabet	0.4183	55%
Geometric Design	0.0999	13%
Word Meaning	0.0697	9%
Visual Memory (DARD)	0.0248	3%
Visual Closure	0.0166	2%
Similarities	0.0220	3%
Auditory Reception	0.0110	1%
		Total 86%

Results Related to Hypothesis III

and Question III

Hypothesis III: There is no significant relationship between the scores on the pre-reading readiness variables and reading achievement when using the Linguistic Word Structure method of teaching reading.

Correlations of the pre-reading readiness variables and the criterion variable, Linguistic Word Structure, are presented in Table VII. All variables with the exception of three, Visual Reception, Manual Expression, and Matching, were significant at the .01 level of confidence. Visual Reception was significant, however, at the .05 level

TABLE VII

RESULTS OF CORRELATIONS OF READINESS VARIABLES WITH THE LINGUISTIC WORD STRUCTURE METHOD

Readiness Variable	Correlation Coefficient Linguistic Word Structure Method
Auditory Reception	0.365
Visual Reception	0.343
Visual Memory	0.261
Auditory Association	0.565
Auditory Memory	0.273
Visual Association	0.475
Visual Closure	0.304
Verbal Expression	0.382
Grammatic Closure	0.583
Manual Expression	0.250
Auditory Closure	0.365
Sound Blending	0.570
Information	0.468
Vocabulary	0.566
Arithmetic	0.478
Similarities	0.494
Comprehension	0.477
Sentences	0.504
Animal House	0.338
Picture Completion	0.415
Mazes	0.389
Geometric Design	0.361
Block Design	0.374
Digit Span	0.501
Receptive Vocabulary	0.375
Visual Memory	0.457
Word Meaning	0.471
Listening	0.404
Matching	0.155
Alphabet	0.533
Numbers	0.521
Copying	0.311

.303 indicates critical value at .01 level of confidence.
.232 indicates critical value at .05 level of confidence.

of confidence, while Manual Expression and Matching did not show significance at this level. For the criterion variable, Linguistic Word Structure, .232 indicates the .05 level of significance and .303 indicates the .01 level of significance.

Hypothesis III will be rejected for all the pre-reading readiness variables except Manual Expression and Matching.

Question III: In regard to the criterion variable, Linguistic Word Structure, will there be a significant contribution to the multiple correlation when all of the predictor variables are employed?

In the stepwise multiple regression of 32 predictor variables, 30 added to the multiple correlation. The two subtests Verbal Expression and Word Meaning added nothing of significance and were, therefore, not included in the multiple correlation. The predictor variables which contributed significantly to the multiple correlation are presented in Table VIII. Of these 30 included variables, some added very little to the correlation. In order to determine the ones contributing the most to the multiple R, an F-test was used. For the criterion variable Linguistic Word Structure, a .05 level of significance for F value was determined to be 7.075.

The predictor variables were then grouped to determine which ones were accounting for the greatest degree of variance in the computed correlations. Table IX presents the groupings of the significant predictor variables with the percentages and amount of variance as it significantly contributed to the multiple R.

With the Linguistic Word Structure method of teaching reading as the criterion variable, significant predictor variables were: Alphabet,

TABLE VIII

RESULTS OF THE STEPWISE CORRELATION FOR LINGUISTIC WORD STRUCTURE METHOD

Readiness Variable	Multiple R	Multiple R^2	F Ratio
Alphabet	.7380	.5446	76.5414*
Picture Completion	.7828	.6128	11.0971*
Sound Blending	.8066	.6506	6.7078*
Animal House	.8252	.6810	5.8141*
Sentences	.8411	.7074	5.4127*
Grammatic Closure	.8504	.7232	3.3558*
Matching	.8595	.7387	3.4493*
Copying	.8730	.7622	5.6301*
Visual Reception	.8813	.7766	3.6187*
Numbers	.8886	.7897	3.4176*
Manual Expression	.8975	.8055	4.4026*
Auditory Memory	.9006	.8111	1.5477
Vocabulary	.9034	.8161	1.4374
Arithmetic	.9066	.8219	1.6526
Mazes	.9087	.8257	1.0933
Auditory Reception	.9102	.8285	.7966
Word Meaning	.9115	.8308	.6528
Information	.9126	.8328	.5658
Comprehension	.9143	.8360	.8967
Digit Span	.9160	.8390	.8323
Visual Closure	.9169	.8406	.4493
Visual Memory (DARD)	.9179	.8424	.4990
Auditory Association	.9185	.8436	.3071
Visual Memory (ITPA)	.9192	.8450	.3666
Block Design	.9200	.8463	.3519
Receptive Vocabulary	.9206	.8475	.3057
Visual Association	.9211	.8484	.2082
Geometric Design	.9216	.8493	.2290
Similarities	.9221	.8502	.2268
Auditory Closure	.9221	.8503	.0109

* Significant at the .05 level of confidence.

Picture Completion, Sound Blending, Animal House, Sentences, Grammatic Closure, Matching, Copying, Visual Reception, Numbers, and Manual Expression. These predictor variables accounted for 14 percent of the explained variation, which is .8980.

TABLE IX

SUMMARY OF SIGNIFICANT PREDICTORS FOR LINGUISTIC WORD STRUCTURE METHOD

Significant Predictor	Increase in R^2	Percentage of Explained Variation
Alphabet	.5546	64%
Picture Completion	.0682	8%
Sound Blending	.0378	4%
Animal House	.0304	4%
Sentences	.0264	3%
Grammatic Closure	.0157	2%
Matching	.0155	2%
Copying	.0235	3%
Visual Reception	.0144	2%
Numbers	.0131	2%
Manual Expression	.0159	2%
		Total 96%

Results Related to Hypothesis IV and Question IV

Hypothesis IV: There is no significant relationship between the scores on the pre-reading readiness variables and reading achievement when using the Linguistic-Language Experience method of teaching reading.

Correlations for the pre-reading readiness variables and the criterion variable, Linguistic-Language Experience, are presented in Table X. All the readiness variables were significant at the .01 level of confidence, with the exception of Visual Closure, Manual Expression, and Matching. The Visual Closure variable was, however, significant at the .05 level of confidence. Manual Expression and Matching were not significant at either level. For the criterion variable Linguistic-Language Experience, .232 indicates the .05 level of confidence and .303 indicates the .01 level of significance.

Hypothesis IV will be rejected for all the pre-reading variables except Manual Expression and Matching.

Question IV: In regard to the criterion variable, Linguistic-Language Experience, will there be a significant contribution to the multiple correlation when all of the predictor variables are employed?

In the stepwise multiple regression of the 32 predictor variables, 31 added to the multiple correlations. One variable, Visual Closure, added nothing of significance and was, therefore, not included in the multiple correlation. The predictor variables which contributed significantly to the multiple correlation are presented in Table XI.

TABLE X

RESULTS OF CORRELATIONS OF READINESS VARIABLES
WITH LINGUISTIC-LANGUAGE EXPERIENCE METHOD

Readiness Variable	Correlation Coefficient Linguistic-Language Experience Method
Auditory Reception	0.320
Visual Reception	0.313
Visual Memory	0.448
Auditory Association	0.504
Auditory Memory	0.317
Visual Association	0.326
Visual Closure	0.254
Verbal Expression	0.402
Grammatic Closure	0.495
Manual Expression	0.190
Auditory Closure	0.372
Sound Blending	0.560
Information	0.504
Vocabulary	0.413
Arithmetic	0.431
Similarities	0.395
Comprehension	0.390
Sentences	0.430
Animal House	0.480
Picture Completion	0.420
Mazes	0.489
Geometric Design	0.459
Block Design	0.447
Digit Span	0.570
Receptive Vocabulary	0.356
Visual Memory	0.392
Word Meaning	0.492
Listening	0.451
Matching	0.182
Alphabet	0.552
Numbers	0.610
Copying	0.348

.303 indicates critical value at .01 level of confidence.
.232 indicates critical value at .05 level of confidence.

TABLE XI

RESULTS OF THE STEPWISE CORRELATION FOR LINGUISTIC-LANGUAGE EXPERIENCE METHOD

Readiness Variable	Multiple R	Multiple R^2	F Ratio
Numbers	.6098	.3719	37.8873*
Sound Blending	.7048	.4967	15.6250*
Alphabet	.7365	.5424	6.2000*
Auditory Reception	.7521	.5656	3.2516*
Picture Completion	.7650	.5853	2.8500*
Information	.7797	.6080	3.4095*
Animal House	.7893	.6230	2.3173
Matching	.8016	.6425	3.1081*
Comprehension	.8078	.6526	1.6232
Visual Memory (ITPA)	.8140	.6626	1.6388
Manual Expression	.8221	.6759	2.2087*
Mazes	.8275	.6847	1.4884
Arithmetic	.8308	.6903	.9297
Auditory Association	.8349	.6970	1.1325
Vocabulary	.8391	.7041	1.2034
Visual Memory (DARD)	.8420	.7089	.8112
Sentences	.8431	.7108	.3137
Verbal Expression	.8444	.7130	.3578
Word Meaning	.8457	.7153	.3628
Visual Reception	.8470	.7174	.3448
Listening	.8489	.7206	.4935
Auditory Closure	.8499	.7224	.2788
Digit Span	.8506	.7235	.1719
Copying	.8511	.7244	.1353
Auditory Memory	.8516	.7253	.1244
Similarities	.8520	.7259	.0904
Visual Association	.8522	.7262	.0452
Grammatic Closure	.8523	.7264	.0295
Block Design	.8524	.7267	.0284
Receptive Vocabulary	.8525	.7268	.0192
Geometric Design	.8526	.7269	.0118

* Significant at the .05 level of confidence.

In order to determine the predictor variables contributing the most to the correlation, an F-test was used. For the criterion variable Linguistic-Language Experience, a .05 level of significance for F value was determined to be 3.120.

The predictor variables were then grouped to determine which ones were accounting for the greatest degree of variance in the computed correlations. Table XII presents the groupings of the significant predictor variables with the percentages and amount of variance as it significantly contributed to the multiple R.

TABLE XII

SUMMARY OF SIGNIFICANT PREDICTORS FOR LINGUISTIC-LANGUAGE EXPERIENCE METHOD

Significant Predictor	Increase in R^2	Percentage of Explained Variation
Numbers	.3719	51%
Sound Blending	.1248	17%
Alphabet	.0458	6%
Auditory Reception	.0232	3%
Picture Completion	.0197	3%
Information	.0227	3%
Matching	.0195	3%
Manual Expression	.0133	2%
	Total	88%

With the Linguistic-Language Experience method of teaching reading as the criterion variable, significant predictor variables were: Numbers, Sound Blending, Alphabet, Auditory Reception, Picture Completion, Information, Matching, and Manual Expression. These predictor variables accounted for 88 percent of the explained variation, which was .8247.

Summary

The results of the Pearson product-moment correlation, multiple correlation, and stepwise multiple regression were presented in this chapter. The hypotheses were tested by these statistical procedures for each predictor variable being investigated.

Pre-reading readiness variables significantly related to the Auditory-Visual method of teaching reading were Grammatic Closure, Vocabulary, Visual Association, Numbers, Sound Blending, Receptive Vocabulary, Alphabet, Auditory Reception, and Matching. A summary of these significant predictors is found in Table II of this chapter.

Pre-reading readiness variables significantly related to the Visual-Auditory method of teaching reading were Alphabet, Geometric Design, Word Meaning, Visual Memory (DARD), Visual Closure, Similarities, and Auditory Reception. A summary of these significant predictors is found in Table V.

Pre-reading readiness variables significantly related to the Linguistic Word Structure method of teaching reading were Alphabet, Picture Completion, Sound Blending, Animal House, Sentences, Grammatic, Closure, Matching, Copying, Visual Reception, Numbers, and Manual

Expression. A summary of these significant predictors is found in Table VIII.

Pre-reading readiness variables significantly related to the Linguistic-Language Experience method of teaching reading were Numbers, Sound Blending, Alphabet, Auditory Reception, Picture Completion, Information, and Matching. A summary of these significant predictors is found in Table XI.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary and Conclusions

The purpose of this study was to determine the predictive relationship between certain pre-reading variables and reading achievement in kindergarten children. A total of 36 subtests were administered to the sample population of 66 kindergarten students. Scores obtained from the four subtests of the Ray Reading Methods Test were used as the four criterion variables. The remaining 32 subtest scores were used as the predictor variables.

Four hypotheses were presented in the null form pertaining to the predictive relationship of the pre-reading variables to each of the four criterion variables. The hypotheses were tested by analyzing the raw data using the Pearson product-moment correlation technique. For each criterion variable the examination resulted in determining significant correlations with the predictor variables.

The conclusions based on the results of the Pearson product-moment are as follows:

Hypothesis I: There is no significant relationship between the scores on the pre-reading readiness variables and reading achievement when using the Auditory-Visual method of teaching reading. Hypothesis I was rejected for all the predictor variables except Matching.

Hypothesis II: There is no significant relationship between the scores on the pre-reading readiness variables and reading achievement when using the Visual-Auditory method of teaching reading. Hypothesis II was rejected for all the predictor variables except Visual Closure.

Hypothesis III: There is no significant relationship between the scores on the pre-reading readiness variables and reading achievement when using the Linguistic Word Structure method of teaching reading. Hypothesis III was rejected for all the predictor variables except Manual Expression and Matching.

Hypothesis IV: There is no significant relationship between the scores on the pre-reading readiness variables and reading achievement when using the Linguistic-Language Experience method of teaching reading. Hypothesis IV was rejected for all the predictor variables except Matching and Manual Expression.

Four questions were asked to allow for the identification of the optimum combinations of predictor variables and their unique contribution to the multiple correlation.

Question I: In regard to the criterion variable, Auditory-Visual, will there be a significant contribution to the multiple correlation when all of the predictor variables are employed?

For the criterion variable, Auditory-Visual, all 32 predictors added to the multiple correlation. The best combination of the predictor variables for the Auditory-Visual reading method was Grammatic Closure, Vocabulary, Visual Association, Numbers, Sound Blending, Receptive Vocabulary, Alphabet, Auditory Reception, and Matching.

Question II: In regard to the criterion variable, Visual-Auditory, will there be a significant contribution to the multiple correlation when all of the predictor variables are employed?

For the criterion variable, Visual-Auditory, 29 predictors added to the multiple correlation. Excluded were Manual Expression, Auditory Closure, and Arithmetic. The best combination of the predictor variables for the Visual-Auditory reading method was Alphabet, Geometric Design, Word Meaning, Visual Memory, Visual Closure, Similarities, and Auditory Reception.

Question III: In regard to the criterion variable, Linguistic Word Structure, will there be a significant contribution to the multiple correlation when all of the predictor variables are employed?

For the criterion variable, Linguistic Word Structure, 30 predictors added to the multiple correlation. Excluded were Verbal Expression and Word Meaning. The best combination of predictor variables for the Linguistic Word Structure reading method was Alphabet, Picture Completion, Sound Blending, Animal House, Sentences, Grammatic Closure, Copying, Visual Reception, Numbers, and Manual Expression.

Question IV: In regard to the criterion variable, Linguistic-Language Experience, will there be a significant contribution to the multiple correlation when all of the predictor variables are employed?

For the criterion variable, Linguistic-Language Experience, 31 predictors added to the multiple correlation. Visual Closure was excluded. The best combination of predictor variables for the Linguistic-Language Experience reading method was Numbers, Sound Blending, Alphabet, Auditory Reception, Picture Completion, Information, Matching, and Manual Expression.

Recommendations

As a result of these research findings, attention should be given to the child's contributions of perceptual and cognitive functions to the learning task. These perceptual and cognitive functions are commensurate to beginning reading achievement.

The patterns of behavior which are predictive of success using the Auditory-Visual method of beginning reading instruction are measured by Grammatic Closure, Visual Association, Sound Blending, Auditory Reception (Illinois Test of Psycholinguistic Abilities), Numbers, Alphabet, Matching (Metropolitan Reading Readiness Tests), Receptive Vocabulary (Peabody Picture Vocabulary Test), and Vocabulary (Wechsler Preschool and Primary Scale of Intelligence).

A companion study by Young (1975) revealed that the following subtests from the Murphy-Durrell Reading Readiness Analysis were also predictive of success using the Auditory-Visual method of reading: Learning Rate and Phonemes I. Table XIII shows the subtests which were found by both investigators to be predictive of success using this method.

For predicting success using the Auditory-Visual method of beginning reading, the reading specialist should administer and use the scores from the subtests presented in Table XIV. This table shows a summary of predictors found for this study and the companion study by Young (1975).

Both studies indicate that the predictor variables listed as most predictive of success with the Auditory-Visual method of reading are not exclusively auditory or visual tasks.

TABLE XIII

COMMON SIGNIFICANT PREDICTORS FOR AUDITORY-VISUAL METHOD OF TWO INVESTIGATIONS

Instrument (Test)	Predictor Variable (Subtest)
Illinois Test of Psycholinguistic Abilities	Grammatic Closure Visual Association Sound Blending
Wechsler Preschool and Primary Scale of Intelligence	Vocabulary
Peabody Picture Vocabulary Test	Receptive Vocabulary

TABLE XIV

SUMMARY OF SIGNIFICANT PREDICTORS FOR AUDITORY-VISUAL METHOD OF TWO INVESTIGATIONS

Instrument (Test)	Predictor Variable (Subtest)
Illinois Test of Psycholinguistic Abilities	Grammatic Closure Visual Association Sound Blending Auditory Reception
Wechsler Preschool and Primary Scale of Intelligence	Vocabulary Geometric Design Information
Peabody Picture Vocabulary Test	Receptive Vocabulary
Metropolitan Reading Readiness Tests	Numbers Alphabet Matching
Murphy-Durrell Reading Readiness Analysis	Learning Rate Phonemes

In many cases a trained and certified reading specialist is not accessible to administer the Illinois Test of Psycholinguistic Abilities or the Wechsler Preschool and Primary Scale of Intelligence. It is, therefore, recommended that a classroom teacher administer the Peabody Picture Vocabulary Test and selected subtests listed in Table XIV from the Metropolitan Reading Readiness Tests and the Murphy-Durrell Reading Readiness Analysis to predict the success a student will have using the Auditory-Visual method of reading.

The patterns of behavior which are predictive of success using the Visual-Auditory method of beginning reading instruction are measured by Visual Closure, Auditory Reception, (Illinois Test of Psycholinguistic Abilities), Alphabet, Word Meaning (Metropolitan Reading Readiness Tests), Geometric Design, Similarities (Wechsler Preschool and Primary Scale of Intelligence), and Visual Memory (Durrell Analysis of Reading Difficulty).

A companion study by Young (1975) revealed that the following subtests from the Murphy-Durrell Reading Readiness Analysis were also predictive of success using the Visual-Auditory method of reading: Letter Names II and Learning Rate. The only subtest found to be predictive of success using the Visual-Auditory method by both investigators was Geometric Design (Wechsler Preschool and Primary Scale of Intelligence).

For predicting success using the Visual-Auditory method of beginning reading, the reading specialist should administer and use the scores from the subtests presented in Table XV. This table shows a summary of predictors found for this study and the companion study by Young (1975).

TABLE XV

SUMMARY OF SIGNIFICANT PREDICTORS FOR VISUAL-AUDITORY METHOD OF TWO INVESTIGATIONS

Instrument (Test)	Predictor Variable (Subtest)
Illinois Test of Psycholinguistic Abilities	Visual Closure Auditory Reception Auditory Association Visual Reception
Wechsler Preschool and Primary Scale of Intelligence	Geometric Design Similarities Mazes Picture Completion
Durrell Analysis of Reading Difficulty	Visual Memory
Metropolitan Reading Readiness Tests	Alphabet Word Meaning
Murphy-Durrell Reading Readiness Analysis	Letter Names II Learning Rate

Both studies indicate that the predictor variables listed as most predictive of success with the Visual-Auditory method of reading are not exclusively visual or auditory tasks.

In many cases a trained and certified reading specialist is not accessible to administer the Illinois Test of Psycholinguistic Abilities or the Wechsler Preschool and Primary Scale of Intelligence. It is, therefore, recommended that a classroom teacher administer the selected subtests listed in Table XV from the Durrell Analysis of Reading Difficulty, Metropolitan Reading Readiness Tests, and the Murphy-Durrell

Reading Readiness Analysis to predict the success a student will have using the Visual-Auditory method of reading.

The patterns of behavior which are predictive of success using the Linguistic Word Structure method of beginning reading instruction are measured by Sound Blending, Grammatic Closure, Visual Reception, Manual Expression (Illinois Test of Psycholinguistic Abilities), Picture Completion, Animal House, Sentences (Wechsler Preschool and Primary Scale of Intelligence), Alphabet, Matching, Copying, and Numbers (Metropolitan Reading Readiness Tests).

A companion study by Young (1975) revealed that the following subtests from the Murphy-Durrell Reading Readiness Analysis were also predictive of success using the Linguistic Word Structure method of reading: Letter Names II, Learning Rate, and Phonemes II. Table XVI shows the subtests which were found by both investigators to be predictive of success using this method.

TABLE XVI

COMMON SIGNIFICANT PREDICTORS FOR LINGUISTIC WORD STRUCTURE METHOD OF TWO INVESTIGATIONS

Instrument (Test)	Predictor Variable (Subtest)
Illinois Test of Psycholinguistic Abilities	Grammatic Closure
Wechsler Preschool and Primary Scale of Intelligence	Animal House Sentences Grammatic Closure

For predicting success using the Linguistic Word Structure method of beginning reading, the reading specialist should administer and use the scores from the subtests presented in Table XVII. This table shows a summary of predictors found for this study and the companion study by Young (1975).

TABLE XVII

SUMMARY OF SIGNIFICANT PREDICTORS FOR LINGUISTIC WORD STRUCTURE METHOD OF TWO INVESTIGATIONS

Instrument (Test)	Predictor Variable (Subtest)
Illinois Test of Psycholinguistic Abilities	Sound Blending Grammatic Closure Visual Reception Manual Expression Auditory Association Auditory Closure
Wechsler Preschool and Primary Scale of Intelligence	Picture Completion Animal House Sentences
Metropolitan Reading Readiness Tests	Alphabet Matching Copying Numbers
Murphy-Durrell Reading Readiness Analysis	Letter Names II Learning Rate Phonemes II

Both studies indicate that the predictor variables listed as most predictive of success with the Linguistic Word Structure method of reading are not exclusively visual-patterned tasks.

In many cases a trained and certified reading specialist is not accessible to administer the Illinois Test of Psycholinguistic Abilities or the Wechsler Preschool and Primary Scale of Intelligence. It is, therefore, recommended that a classroom teacher administer selected subtests of the Metropolitan Reading Readiness Tests and the Murphy-Durrell Reading Readiness Analysis as listed in Table XVII when predicting the success a student will have using the Linguistic Word Structure method of reading.

The patterns of behavior which are predictive of success using the Linguistic-Language Experience method of beginning reading instruction are measured by Sound Blending, Auditory Reception, Manual Expression (Illinois Test of Psycholinguistic Abilities), Picture Completion, Information (Wechsler Preschool and Primary Scale of Intelligence), Numbers, Alphabet, and Matching (Metropolitan Reading Readiness Tests).

A companion study by Young (1975) revealed that the Learning Rate subtest from the Murphy-Durrell Reading Readiness Analysis was also predictive of success using this method. Table XVIII shows the subtests which were found by both investigators to be predictive of success using the Linguistic-Language Experience method.

For predicting success using the Linguistic-Language Experience method of beginning reading, the reading specialist should administer and use the scores from the subtests presented in Table XIX. This table shows a summary of predictors found for this study and the companion study by Young (1975).

TABLE XVIII

COMMON SIGNIFICANT PREDICTORS FOR LINGUISTIC-LANGUAGE EXPERIENCE METHOD OF TWO INVESTIGATIONS

Instrument (Test)	Predictor Variable (Subtest)
Illinois Test of Psycholinguistic Abilities	Sound Blending Auditory Reception

TABLE XIX

SUMMARY OF SIGNIFICANT PREDICTORS FOR LINGUISTIC-LANGUAGE EXPERIENCE METHOD OF TWO INVESTIGATIONS

Instrument (Test)	Predictor Variable (Subtest)
Illinois Test of Psycholinguistic Abilities	Sound Blending Auditory Reception Manual Expression Visual Memory
Wechsler Preschool and Primary Scale of Intelligence	Animal House Information Picture Completion
Metropolitan Reading Readiness Tests	Numbers Alphabet Matching
Murphy-Durrell Reading Readiness Analysis	Learning Rate

Both studies indicate that the predictor variables listed as most predictive of success with the Linguistic-Language Experience method of reading are not exclusively language-based tasks.

In many cases a trained and certified reading specialist is not accessible to administer the Illinois Test of Psycholinguistic Abilities or the Wechsler Preschool and Primary Scale of Intelligence. It is, therefore, recommended that a classroom teacher administer the selected subtests from the Metropolitan Reading Readiness Tests and the Murphy-Durrell Reading Readiness Analysis which are reported in Table XIX when predicting success with the Linguistic-Language Experience method of reading.

The results of this investigation indicate that recommending utilization of the significant subtests to predict success using one of the specific methods of reading can lead to a more systematic approach for the teacher. Not only would the teacher be able to know what method is most appropriate for each child, but, also, valuable information about the skills and abilities of the individual child could be obtained and utilized.

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APPENDIX A

COMMUNICATION WITH PARENTS

December 3, 1974

Dear Parents:

Blackwell Public Schools have been chosen as the population for a research study. This study will be conducted by Dorothy Young and Kathy Treadway, doctoral students at Oklahoma State University. The study, dealing with beginning reading, will be explained and discussed Monday, December 9, 1974, at 3:15 p.m. in the Blackwell High School auditorium.

Parents of kindergarten children and the kindergarten teachers are encouraged to attend this meeting.

Sincerely,

Bill Hicks

Bill Hicks
Asst. Sup't. of
Blackwell Schools

April 18, 1975

Dear Parents,

In the last few weeks we have completed the testing program conducted in the kindergarten classes. We are anxious to share the results with you.

Arrangements for conferences may be made with your child's kindergarten teacher during the week of April 21-25. The conferences will be scheduled for April 28th and 29th. They will be individual conferences.

We sincerely appreciate your cooperation and the cooperation of the Blackwell Schools in this reading research endeavor.

Kathy Treadway
Dorothy Young

APPENDIX B

RAW SCORE DATA SHEET

Name _____ M _____ F _____

Birthdate _____ Age _____

Teacher _____ School _____

TESTS & SUBTESTS	RAW SCORE	
Illinois Test of Psycholinguistic Abilities		
Auditory Reception	_____	(1)
Visual Reception	_____	(2)
Visual Memory	_____	(3)
Auditory Association	_____	(4)
Auditory Memory	_____	(5)
Visual Association	_____	(6)
Visual Closure	_____	(7)
Verbal Expression	_____	(8)
Grammatic Closure	_____	(9)
Manual Expression	_____	(10)
Auditory Closure	_____	(11)
Sound Blending	_____	(12)
Wechsler Preschool and Primary Scale of Intelligence		
Information	_____	(13)
Vocabulary	_____	(14)
Arithmetic	_____	(15)
Similarities	_____	(16)
Comprehension	_____	(17)
Sentences	_____	(18)
Animal House	_____	(19)
Picture Completion	_____	(20)
Mazes	_____	(21)
Geometric Design	_____	(22)
Block Design	_____	(23)
Peabody Picture Vocabulary Test	_____	(24)
Wechsler Intelligence Scale for Children		
Digit Span	_____	(25)
Durrell Analysis of Reading Difficulty		
Visual Memory of Words-Primary	_____	(26)
Metropolitan Reading Readiness Test		
Word Meaning	_____	(27)
Listening	_____	(28)
Matching	_____	(29)
Alphabet	_____	(30)
Numbers	_____	(31)
Copying	_____	(32)

Ray Reading Methods Test

Auditory-Visual	_____	(33)
Visual-Auditory	_____	(34)
Linguistic Word Structure	_____	(35)
Linguistic-Language Experience	_____	(36)

APPENDIX C

MEANS AND STANDARD DEVIATION OF READINESS VARIABLES

TABLE XX

MEANS AND STANDARD DEVIATIONS OF
READINESS VARIABLES

Readiness Variables	Mean	Standard Deviation
Auditory Reception	24.484	5.972
Visual Reception	18.924	5.542
Visual Memory (ITPA)	15.196	3.835
Auditory Association	20.484	5.550
Auditory Memory	21.984	7.451
Visual Association	19.954	3.908
Visual Closure	18.545	4.343
Verbal Expression	21.121	6.047
Grammatic Closure	18.151	5.514
Manual Expression	21.075	5.069
Auditory Closure	15.878	4.535
Sound Blending	15.363	6.401
Information	15.166	2.885
Vocabulary	17.257	7.082
Arithmetic	11.969	2.007
Similarities	12.575	3.758
Comprehension	15.378	4.873
Sentences	16.484	5.472
Animal House	46.045	10.165
Picture Completion	13.863	4.011
Mazes	15.727	5.298
Geometric Design	11.666	4.595
Block Design	11.242	3.934
Digit Span	6.363	2.050
Receptive Vocabulary	57.454	6.295
Visual Memory (DARD)	6.090	2.623
Word Meaning	8.818	2.589
Listening	10.803	2.295
Matching	7.772	2.923
Alphabet	12.121	3.951
Numbers	13.363	4.134
Copying	6.075	3.370

APPENDIX D

ADMINISTRATION OF THE PREDICTIVE BATTERIES

TABLE XXI

ADMINISTRATION OF THE PREDICTIVE BATTERIES

Classroom Teacher	Specialized Administrator
Peabody Picture Vocabulary Test	Illinois Test of Psycholinguistic Abilities
Wechsler Intelligence Scale for Children	(Auditory Reception)
(Digit Span)	(Visual Reception)
	(Visual Memory)
Durrell Analysis of Reading Difficulty	(Auditory Association)
(Visual Memory of Words)	(Auditory Memory)
	(Visual Association)
Murphy-Durrell Reading Readiness Analysis	(Visual Closure)
(Learning Rate)	(Verbal Expression)
(Phonemes I)	(Grammatic Closure)
(Phonemes II)	(Manual Expression)
(Letter Names II)	(Auditory Closure)
	(Sound Blending)
Metropolitan Reading Readiness Test	Wechsler Preschool and Primary Scale of Intelligence
(Alphabet)	(Vocabulary)
(Numbers)	(Information)
(Matching)	(Similarities)
(Word Meaning)	(Sentences)
	(Animal House)
	(Picture Completion)
	(Mazes)
	(Geometric Design)

VITA

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Candidate for the Degree of

Doctor of Education

Thesis: THE RELATIONSHIP BETWEEN PRE-READING PATTERNS OF BEHAVIOR AND SUCCESS WITH SPECIFIC READING METHODS OF KINDERGARTEN CHILDREN

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Education: Attended public schools in Lawton, Oklahoma. Graduated from Lawton High School in 1967. Attended Cameron State College, Lawton, Oklahoma, 1967-1969; received Bachelor of Science Degree in Elementary Education from Oklahoma State University in 1971; received Master of Science Degree in Elementary Education from Oklahoma State University in 1973; completed requirements for the Degree of Doctor of Education in July, 1975.

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