THE RELATIONSHIP BETWEEN PRE-READING BEHAVIOR

PATTERNS AND SUCCESS OF SPECIFIC READING

METHODS WITH KINDERGARTEN CHILDREN

By

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CHAPTER I

PRESENTATION OF PROBLEM

Introduction

Investigation of the learning process, particularly the process of learning to read, suggests that children do learn to read through a variety of approaches. Children are different and appear to have a preference of using one pattern of learning more than another.

Available studies and investigations of the importance of the various modes of learning emphasize the serious nature of one problem facing educators today--the high percentage of children who are not successful in reading. Although remediation is clearly necessary, a more comprehensive approach to the reduction of reading disabilities requires the delineation of causal factors. Under the most favorable conditions, it can be assumed that such an approach would lead to early diagnosis of learning difficulties and could prevent both the failure experiences and negative attitudes towards education that many unsuccessful readers subsequently develop.

Reading is considered to be an immensely complex process which includes numerous sensory, motoric, conceptual and communication skills. The teaching of reading is often predicated on the possession of minimal levels of these specific skills. In the initial stages of reading instruction, for example, the child is expected to learn to

associate an oral-language response, or the teacher's voice, to a
visual cue, or a written word. The response expected from this pro-
cess assumes that the child has the capacity of attending to, recogniz-
ing, remembering, and discriminating both auditory and visual stimuli.
The beginning learner is often assumed to be equally proficient with
regard to these two channels of communication. However, difficulties
might arise with respect to any one of these specific skills, and may
be more pronounced in one channel of learning than another. Further-
more, many children who are capable of responding to and retaining
auditory or visual stimuli separately, might experience failure when
both kinds of information are presented together.

Children, indicating no specific learning problems, have shown
some differences in their preference as to the intake and processing of
information. Beginning readers seem to have developed strengths in one
or more of the learning patterns, but the adaption of instruction to
that particular preference has been almost non-existent.

Need for the Study

The ultimate goal of professionals in the field of reading is to
provide each child with the most effective reading instruction. Indi-
vidual needs and abilities should be the foundation of instruction.
In order to allow for pupil differences, there is a need to know more
about perceptual and cognitive functions and their relationships to
beginning reading achievement. Researchers investigating these func-
tions must consider the contributions of the various channels or learn-
ing patterns as they relate to one another and to reading achievement.

Reading literature emphasizes the importance of determining the poor reader's inadequate abilities in underlying skills. Such information could be used to prevent reading difficulties by administering training in these auditory and visual skills at an early stage. The maturation pattern for each of the sensory modalities may fluctuate from one child to another. A child may develop slowly in one, more rapidly in another. Others may mature slowly in all areas.

Wepman (1971) states the concept of differential use of the separate input pathways is no longer theoretical, but an accepted fact about children and their learning. He further states that the differential modality distinction appears to be related more closely to the innate capacity of a child than to any determinable environmental factor. For most children, the two major modalities reach a stage of equalization of function by age nine. Lags in development are overcome by that time. It is noted that the modality showing the most rapid development usually indicates the child's predilection, or that a modality matures because of some innate neurological tendency.

The importance of determining reading readiness has been pointed out by reading authorities. Betts (1964) pointed out that a careful study of reading readiness factors could result in the prevention of future reading difficulties by giving the teacher bases for a beginning reading program. Durrell (1958) also stated that reading problems might be prevented, and unnecessary instruction eliminated, if reading readiness abilities could be established. While Durkin (1966) recommends that children be taught to read at different ages, Gates and Bond (1936) expressed a point that the optimum time to begin reading is not entirely dependent upon the nature of the child himself, but

it is in large measure determined by the nature of the reading program.

Chall (1963) has pointed out in her extensive review of the problem, there is still considerable disagreement as to the best way to teach a young child to read. She stated that an early acquisition of the code was necessary in teaching reading.

Chall further examined whether teaching methods were at fault in producing reading failure. She stated that both the method and characteristics of the individual contributed to reading failure. She suggested that a child often fails to read if the initial method of instruction is one which ignores the strengths of the child and does not recognize his predisposition or a set of characteristics which make it difficult for him to associate printed symbols with their spoken counterparts. She also found that using only one method produced more reading failures than the use of differentiated methods in initial instruction.

In her summary, she concluded that only two approaches--a code emphasis and a meaning emphasis--produced some failure and that a heavy emphasis of using only one method was wrong and ineffectual for some children.

Research of a child's different learning patterns is of major importance to the field of reading. Wepman (1964) suggested that differences in the critical factors relating to reading do exist at the perceptual level and that the modality concept is most concerned with psycholinguistic skills which provide the foundation for integrative and comprehension abilities.

Both Harris (1964) and deHirsch (1966) reported findings that suggest the possibility of dominant learning patterns, and they indicated that such perceptual styles should be taken advantage of by using instructional methods that are adapted to the learner's particular strengths in perception, imagery, and recall.

Frostig (1969) recommended that consideration be given to the choice of teaching methods in beginning reading which considers each child's specific strengths and weaknesses. She has suggested that a more fruitful approach would be to explore the cognitive and other abilities of an individual. These abilities should be related to different task processes at various stages of development and performance. The educator could then choose the optimum method to help a particular child learn a particular task.

Purpose of the Study

The purpose of this study was to gather information about interrelationships of perceptual and conceptual tasks and success in beginning reading.

Specifically, the purpose of the study was to determine whether the child who scores high on tests which measure visual, auditory, or language strengths will also respond successfully to a method of learning to read which utilizes these particular strengths.

The investigator pointed out that there are individual differences among children as they learn to read. Although intelligence does account for some differences in reading achievement, other factors such as visual, auditory, and language abilities should be considered.

Research findings have indicated that these particular stated abilities are positively related to reading achievement; however, children are not receiving differentiated reading instruction related to these individual strengths and weaknesses. It is hoped this study will contribute needed information about reading success and pre-reading learning patterns of children. Such information might be useful in early diagnosis of reading problems and selection of beginning reading materials and methods that are most appropriate for each child.

Statement of the Problem

This study was designed to determine if there is a relationship between pre-reading behavior patterns and success with reading when differentiated methods of instruction are utilized with kindergarten children.

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 relationship between the scores

on the pre-reading readiness variables and reading

achievement when using the Linguistic-Language Experi-

ence 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 through-

out this study:

Modality--refers to the sensory pathway through which children

learn and a preference as related to the Auditory-Visual method,

Visual-Auditory method, Linguistic Word Structure method, or the Linguistic-Language Experience method of reading.

Modal Preference--that mode preferred by an individual as indicated by preference ranking on task performance

Auditory-Visual Method--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--The Visual-Auditory method of reading instruction has the word as the basic unit of instruction. In the initial stage 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 right words from controlled vocabulary reading material to be utilized later in an analytical approach to decoding.

Linguistic-Word Structure Method--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--The Language Experience method of reading instruction utilizes the meaningful structure of the learner's own language to provide the basic unit of instruction where 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 Tasks--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.

Limitations of the Study

This study is limited by the population which is representative of a single school district. Though the sample included a wide range of socio-economic levels, it covers 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 literature related to the different approaches to beginning reading could be described as voluminous in scope. Many educators have faced basic issues related to the questions of how to begin reading instruction, when to begin, what type of instructional materials to use, and the organization of classes for instruction. Although many studies and evaluations of reading have been explored since the turn of the century, one particular approach or method to beginning reading has not been determined as the "one method" to meet all instructional needs of all beginning readers.

In two early studies, Gates (1939) and Kottmeyer (1947), readiness tests were found to be effective predictors of reading achievement and to be of genuine usefulness. These findings were supported by Bollings (1956) when he found evidence that the total scores of reading readiness tests were significant in themselves for determining the child's ability to read.

A variety of factors are involved in learning to read--physical, emotional, social, and psychological. The importance of the physical factors of vision and audition is generally recognized. Barrett's (1965) study was to determine the ability of nine reading readiness

factors, seven of which required varying degrees of visual discrimina-
tion, to predict first grade reading achievement. Findings appeared to
support the conclusion that an optimum combination of visual discrimina-
tion tasks for predicting first grade reading achievement would include
tasks similar to Reading Letters and Numbers, Word Matching, and Pat-
tern Copying.

Mitchell (1962) investigated the predictive validity of the
Metropolitan Readiness Tests against the Metropolitan Achievement Tests
as criterion measure. Tests results indicated that the readiness tests
were good predictors of first grade learning. However, the Metropolitan
Readiness Tests and the Murphy-Durrell Reading Readiness Test were used
by Stauffer (1965) and proved significant indicators only for boys.

Monroe (1935) attempted to predict success or failure for 434
primary children. She concluded that children scoring in the 40th to
60th percentiles were in the most critical range and needed special
consideration. Children above the 60th percentile made average or
above average progress in reading, while children below the 30th per-
centile on the aptitude tests could be predicted to fall in the lowest
quartile of reading achievement.

Although Karlin (1957) found that reading readiness tests are
not very valid instruments for predicting success in beginning reading,
Gates (1939) 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.

Several studies indicate relationship between reading readiness
and visual perception. Barrett (1965) found the predictive power was

increased when pattern copying and word matching measures were added
to letter identification. Bilka (1972) did not find _Pattern Copying
Tests_ as adequate in predicting reading achievement as the _Metropolitan
Readiness Test_ or the _Murphy-Durrell Reading Readiness Test_.

Bryan (1964) wanted to determine the relative importance of
visual perception and intelligence in the reading development of primary
age children--kindergarten through third grade. He concluded that
visual perception as well as intelligence and reading readiness should
be tested at kindergarten and first grade.

Williams (1970) attempted to determine the relationship of per-
ception of visual form to reading. He pointed out that kindergarten
children showed no consistent cue selection in matching.

Timko (1972) required his subjects to match trigrams of lowercase
letters, in delayed recognition, against 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 the other types of differences in ordering of letters.

Birch and Belmont (1965) investigated the relationship between
reading readiness and auditory discrimination. Results indicated a
significant correlation between test scores and reading achievement for
the six-year olds. Goodnow (1971) found that kindergarten children
were unable to choose a sequence of taps to match two series of dots.
Klapper (1971) used light flashes for the visual stimulus and clicks
were to be matched with the visual patterns. The correlations between
the scores were low and not significant. Thompson (1963) attempted to
determine whether a relationship existed among auditory discrimination,
intelligence, and success in primary reading. He found that auditory

discrimination skills and intelligence correlated highly with the success in beginning reading.

Dykstra (1966) 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 year. He 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.

The purpose of a study conducted 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) explored 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, to determine whether the Lee-Clark Reading Readiness Test as a whole or one of the subtests offered the best prediction. The authors concluded that the readiness test was useful primarily as a predictor of the Total Reading test results of the entire group.

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. All of the correlations were higher for the Murphy-Durrell Reading Readiness Test than the Coding subtest. There were also significant

correlations at the .01 level for Word Reading, Paragraph Meaning, Spelling, Word Study Skills, and Arithmetic.

Betts (1943) summed up his observations by declaring that because of the highly complex nature of the reading process, no one factor stands out in bold relief. He 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.

In the 1930's and 1940's, we find a consensus of sorts 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 established practices. These guidelines seemed to constitute the conventional wisdom of beginning reading instruction. Austin and Morrison (1961) found that these principles were incorporated in most widely used basal-reading series and teacher's guides, taught by college teachers to future teachers of reading, and followed by most classroom teachers from about 1930 to the early 1960's.

Since the middle 1950's, most of the above stated principles have been challenged and discarded as new reading programs have been successfully introduced. Some of these programs can be classified as concentrated supplemental programs that combine phonics with writing, spelling, and basal reading materials. Complete reading programs have recently developed programs with earlier and heavier phonic emphasis and a significantly heavier vocabulary load.

In recent years, linguistics--or the scientific study of the nature of language--has had a considerable impact on beginning reading methods. Bloomfield (1942) questioned the initial emphasis on "meaning" and promoted learning of the "code" or "the alphabetic habit" as the first step to reading. He 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. He stressed that since English spelling is irregular, the child should learn first those words that are spelled regularly. He insisted that meaning, considered important in conventional programs, comes naturally as the code is broken.

Fries (1962) divided the reading process into three stages. The "transfer" stage related 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 the 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, a modified alphabet and spelling scheme, is offered as a reform for beginning instruction. The alphabet is changed, augmenting it to forty-four characters to make it correspond more closely to the sounds in our language. ITA is to be used only in the beginning stages of reading. Downing's (1964) findings show 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 traditional orthography method.

The language-experience approach to reading encompasses much of the same philosophy of individualized reading. However, the language-experience approach emphasizes early acquisition of the code similar to the linguistic and phonic innovations. The child's unique interest and needs are stressed with the language-experience approach. Although individualized reading stresses self-election of reading materials, the child involved with the language-experience approach will read his own writings. The child's first stories are drawn from his own artistic

productions. Later, he is shown the connection between sounds and letters. Each child is encouraged to proceed at his own pace, and instruction will differ considerably with each teacher.

The language-experience approach was the subject of an extensive study conducted by Allen (1965). The study was used to determine whether or not the language-experience approach produced results that were significantly different than those obtained through the traditional basal reader approach. Teachers in the language-experience approach utilized daily blocks of 120 minutes. Among the various measures of achievement in the language arts were measures on the <u>Stanford Achievement Test</u>. 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 elicited enthusiastic 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

Recent studies have attempted to ascertain the modal preference of each child and to determine whether the possession of such preference is a factor in learning to read. Bateman (1968) attempted to find the relative effectiveness of visual and auditory approaches in initial reading instruction of 182 kindergarten children. All eight classes received the <u>Detroit Group Intelligence Scale</u> and the

Metropolitan Reading Readiness Test. The Illinois Test of Psycho-linguistic Abilities (ITPA) was given to four of the classes in order to separate the children into auditory and visual preference groups. One-half of the first graders were taught with an auditory method, while the other half was taught with a visual method. The same treatment was given the two visual classes which did not receive the Illinois Test of Psycholinguistic Abilities. Scott-Foresman New Basic Readers were used by the visual group, while the auditory method used the Lippincott Basic Reading Series. Analysis of variance was used in the statistical treatment.

The subjects known as the auditory learners made significantly greater gains than did the subjects known as 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.

There were two major weaknesses from the results of this study. First, the reading materials used in the study are not entirely visual or auditory in nature. Second, the probability is small that one-half of all incoming first graders would prefer the visual, while the other half would prefer the auditory method, which was assumed when assigning subjects to one of the learning groups.

In another study using different modes of presentation, Robinson (1968) grouped 448 first grade pupils as either high visual-high auditory, low visual-low auditory, high visual-low auditory, or low visual-high auditory on the basis of their performance on Wepman's Auditory Discrimination Test and three visual discrimination tests. Basal readers were used to represent the sight approach, while Hay-Wingo

materials were used to represent the phonic approach. No significant differences were found between pupils in the high visual-high auditory, high visual-low auditory, or low visual-low auditory groups in the reading sections of the Metropolitan Achievement Tests and the Gray Oral Reading Test. The subjects in the low visual-high auditory groups taught by the phonic method demonstrated greater silent reading achievement at the end of the first grade. One apparent weakness of this study lies in the classification of the basal reading program as strictly sight approach.

Mills (1955) developed a Learning Methods Test to assist the teacher in determining the learning method best suited to the child. He proposed to determine the teaching method or combination of methods most effective in teaching word recognition to various types of individuals. Fifty-eight subjects were divided into nine classifications based on age and intelligence levels. Conclusions of the study showed that different children learned more efficiently by different methods and that no one method was best for all children. For children of low intelligence (I.Q. of 65-80) the phonic method was least effective, while the kinesthetic method was found to be the best method, although it was not statistically superior to the other methods. Children of average I.Q. (85-100) showed an equal preference for the combination and visual methods with the kinesthetic method being least effective. The children of high intelligence (I.Q. 105-120) learned words readily regardless of method. When divided according to age groups, the visual method was best for the eight year olds, and no method was considered outstandingly effective for the nine year olds. Another conclusion of

the study was that the higher the intelligence, the more readily the child learned words..

Mills further stated that because different children learn to recognize words by different methods, the teacher must be aware of these individual differences in applying instruction. In his study, Mills also found that a diagnostic study of the child was needed to determine the most appropriate method to be used. He 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.

Coleman (1962) later used <u>Mills' Learning Methods Test</u> to determine if the visual, auditory, kinesthetic, or the combination 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) under-achievers, as a group, learned as efficiently by one method as by another; (2) severe under-achievers learned best by the visual and combination methods, and the mild under-achievers 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. (below 90) favored the kinesthetic method. The method least effective was the kinesthetic for the average and high I.Q. group and the 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.

Coleman showed that no particular method was significantly superior for all subjects of sub-groups of under-achievers with respect to age, I.Q., or degree of under-achievement. However, all groups showed a

tendency favoring the visual and combination methods. 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.

Jones (1970) sought to explore 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 McKee's alphabet was used for pictures of concrete objects. The modal preference was determined 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.

In the study of deHirsch, Jansky, and Langford (1966), 53 kinder-
garten 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 sub-
jects 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) to determine the learning preferences (auditory,
visual, kinesthetic, or no preference) of 128 first grade children.
Thirty-three children demonstrated a visual preference; thirty children
an auditory preference; 28 a kinesthetic preference; 37 had no prefer-
ence. The subjects within each modality group were randomly assigned
to one of the four controlled groups or one of the four experimental
treatments. 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 development 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 pretest 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.

In a recent study, Bursuk (1971) investigated the relative effectiveness of combined aural-visual and predominantly visual teaching approaches in terms of the interaction with the various sensory modality learning preferences of adolescent retarded readers. She found a significant interaction between pupils' sensory modality learning preferences and the relative effectiveness of the sensory teaching approach used. Specifically, the combined aural-visual approach was more effective in improving the reading comprehension of auditory learners and pupils with no sensory modality learning preference than it was in improving the reading comprehension of auditory learners and pupils with no sensory modality learning preference.

Harris (1964) also investigated individualizing first grade reading according to specific learning aptitudes. He used three methods in teaching reading: visual, auditory, and the kinesthetic approaches.

Harris felt the child with a low visual perception score would benefit more from instruction based on the highest pre-test score than the children who scored low on all three kinds of pre-tests. The twenty children in his study receiving special instruction achieved better than expected in reading when instruction was based on the visual perception scores. However, he stated that no significant association could be established with either the specific method of teaching used or the presence of presumed attitude for that method.

Otto (1961) investigated modes of learning and reading achievement among children, examining variables which he stated had not been checked in earlier studies. Intelligence, the relationship between mode of reinforcement and reading achievement, and the interaction of grade placement with reading level for mode of reinforcement were reported upon. In both studies, he used paired associates (geometric forms and CVC trigrams) and presented them with either auditory, visual-auditory, or kinesthetic-visual-auditory reinforcement. In the 1961 study, he identified the good, average, and poor readers among 108 second, fourth, and sixth graders with average I.Q.'s and tested each subject in turn, using one of the three modes of reinforcement. Results indicated that the lower the grade, the more trials were necessary in order to learn the paired-associates. Also, good, average, and poor readers, in that order, needed more trials for learning. Mode of reinforcement interacted significantly with grade level so that the k-v-a was more effective for second graders; the v-a, for fourth graders; and both of these were about equal for sixth graders. There was not, however, significant interaction between mode of reinforcement and reading level. When retention of what was learned was tested, it was found that good and

poor readers retained what was learned equally well. In his 1963 study,
Otto used the same task and modes of reinforcement as in the 1961 study.
Now, however, he wished to investigate whether poor readers learned
the paired associates more slowly because they had poorer sensory dis-
crimination for the stimulus items or because they had greater dif-
ficulty in reading the CVC trigrams. He used thirty poor readers in
grades four through seven, with I.Q. scores ranging from 92-129, and
examined their abilities to discriminate the geometric forms and tri-
grams as well as to read the trigrams.

He found that neither poor discrimination nor poor reading of
the trigrams was significant. In addition, scores resulting from
administering the learning tasks to the subjects indicated that there
was no significant difference between the modes of reinforcement, a
finding contradictory to the findings of his 1961 study. Otto sug-
gested that manipulating I.Q. as a variable in a larger study might
lead to an explanation for the contradiction.

Summary

Although many studies have been made in the area of modal pre-
ference, there is no conclusive evidence that it is a significant
factor in achieving success in beginning reading.

The studies of Bateman, Robinson, and Ringler, et al., indicate
that subjects using their preferred modes of learning did not show
significantly greater gains than those subjects using other than their
preferred modes. This was further substantiated by Coleman. However,
he emphasized that groups did show a preference toward the visual and

combination methods. McCarthy, examining the memory patterns or abilities, also found no significance in modal preference.

Although Otto concluded that mode of reinforcement interacted significantly with grade level, there was no significant interaction between mode of reinforcement and reading level.

Bursuk and Mills, both supportive of using preferred modes, state that different children learn more effectively by different methods, and there was a significant interaction between pupils' sensory modality learning preference and the relative effectiveness of the sensory teaching approach used.

CHAPTER III

METHOD OF 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 is characterized
as a predominantly white, middle class, semi-rural community with a
1970 population of approximately 8,700 people. The census data also
indicates 94 percent Caucasian residents and 6 percent "other" resi-
dents comprise the total population. All of the "other" residents are
of American Indian or Mexican-American extraction.

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

Methodology and Design

All of the kindergarten children were given the following tests
individually during the first month of 1975:

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1. <u>Illinois</u> <u>Test</u> <u>of</u> <u>Psycholinguistic</u> <u>Abilities</u>, McCarthy and Kirk (1968 revision).

2. <u>Wechsler</u> <u>Preschool</u> <u>and</u> <u>Primary</u> <u>Scale</u> <u>of</u> <u>Intelligence</u>, D. Wechsler (1949).

3. <u>Peabody</u> <u>Picture</u> <u>Vocabulary</u> <u>Test</u>, Form B, Lloyd M. Dunn (1965).

4. <u>Durrell</u> <u>Analysis</u> <u>of</u> <u>Reading</u> <u>Difficulty</u>, Visual Memory of Words-Primary Subtest, Donald E. Durrell (1955).

5. <u>Wechsler</u> <u>Intelligence</u> <u>Scale</u> <u>for</u> <u>Children</u>, Digit Span Subtest, D. Wechsler (1949).

6. <u>Murphy</u>-<u>Durrell</u> <u>Reading</u> <u>Readiness</u> <u>Test</u>, H. Murphy and Donald D. Durrell (1964).

All of the tests were given individually with the testing sessions lasting from fifteen to forty-five minutes. All testing was conducted by this writer and experienced clinicians and teachers.

All testing was done in isolated rooms in the schools, near the kindergarten classrooms. Only the test administrator and child were present for these directed activities. The rooms were chosen as far from distracting noises as possible.

Several children were absent for a series of days while the initial testing was being done. Arrangements were provided for these children to take all designated tests at a later date.

The instruments used as predictor variables for this study were specific subtests from standardized tests, which measured pre-reading abilities. The criterion tests, or specific subtest, were chosen to measure the response to teaching-learning experiences.

Procedures

A well-lighted, quiet room was used for the teaching sessions. The children either sat on small chairs in a semi-circle with the experimenter in the middle facing the subjects, or they sat on carpeted flooring in front of the experimenter and chalkboard.

The researchers for all the teaching sessions were this writer and a doctoral colleague who was also involved in the 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 twenty 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

<u>Illinois</u> <u>Test</u> <u>of</u> <u>Psycholinguistic</u> <u>Abilities</u>

<u>(1968</u> <u>Revision)</u>

The <u>Illinois</u> <u>Test</u> <u>of</u> <u>Psycholinguistic</u> <u>Abilities</u> (<u>ITPA</u>) is an individually administered, diagnostic test of psychological and linguistic functioning that is based on Osgood's (1957) theoretical model of communication processes. The recent edition, which is a revision of an earlier (1961) experimental edition, contains twelve 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 of predominantly Caucasian race.

Paraskevopoulos and Kirk (1969) have reported that the internal consistency coefficients were .87 for the composite <u>ITPA</u> 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 <u>ITPA</u> 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 <u>ITPA</u>.

For the purpose of this study, all twelve subtests of the <u>Illinois</u> <u>Test</u> <u>of</u> <u>Psycholinguistic</u> <u>Abilities</u> (<u>ITPA</u>) were utilized:

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 pantomine the appropriate action associated with its use.

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.

Peabody Picture Vocabulary Test

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 an 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 Peabody Picture Vocabulary Test was compared with 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 Peabody Picture Vocabulary Test and the Stanford-Binet 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 Peabody Picture Vocabulary Test 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 Peabody Picture Vocabulary Test 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.

Murphy-Durrell Reading Readiness Analysis

The Murphy-Durrell Reading Readiness Analysis measures the child's background in phoneme perception (the ability of identifying separate sounds in spoken words) and his familiarity with the names of capital

and lower-case letters. A test of learning rate for sight words is provided as a further aid in grouping. This instrument of assessment is an outgrowth of the _Murphy-Durrell Reading Readiness Test_, originally published in 1949. The general areas measured are similar in the two editions, but the new edition reflects refinements brought about by many years of research in the field of reading readiness. The outstanding differences are in general format of each subtest, new emphasis on teaching before testing in the administration of the Phonemes Test, the dictation of letters by the teacher in the Letter Names Test rather than the pupil's matching of letters by memory, and the administration of the Learning Rate Test as a group test rather than as an individual test.

Phonemes Test. The Phonemes Test is designed to measure the ability of the child to identify separate sounds in spoken words. It measures in decending order of frequency consonant sounds in their initial position in words, with a few sounds in the final position. Vowel sounds were not tested because they show great variation from one individual to another and from one region of the country to another.

In the administration of this test, the phonemes are first taught, then tested. This is done to assure successful identification of the easiest sounds, and to make clear to the child what he is to do in this test. The amount of teaching required diminishes rapidly; most sounds are learned without initial teaching. In order to have a test long enough to be sufficiently reliable, the first half of the phonemes test is presented during the first sitting, along with the Letter Names Test. The second half is administered at the second sitting, with the Learning

Rate Test. The scores from both halves of the Phonemes Test are combined to determine the score on phoneme identification.

Both capital and lower-case letters are included in this test. Since more capitals are known, they are tested first. However, lower-case letters are more important to reading. It will be noted that the test requires identification of letters named by the teacher. Difficulties in identifying letters named depend in part on the similarity of the "decoy" items; this was taken into account in the construction of the test.

Learning Rate Test. The purpose of the Learning Rate Test is to determine the number of words that a child is able to learn in one day under standard conditions of presentation. Since the Learning Rate Test does not correlate highly with the Phonemes Test or the Letter Names Test, it serves the unique purpose of measuring a different component of pupil's readiness to read.

The nine words in the Learning Rate Test include nouns, verbs, and adjectives, all meaningful to children and easily illustrated. Each word is presented in three different ways--in print on the chalkboard, in print on a flash card, and in the test booklet. At each presentation, the names of the words are given by the teacher and repeated by the children, and meanings are stressed. One hour after teaching, children are asked to identify the words in two multiple-choice situations; the first requires the child to discriminate the word from the other words taught; the second requires the discrimination among words similar in form, but not taught.

<u>Wechsler Intelligence Scale for Children</u>

The <u>Wechsler Intelligence Scale for Children</u> (WISC) consists of twelve tests which, like the 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 and vice versa. But, while the tests identified as verbal and per-formance differ as these labels indicate, they each tap other factors, among them non-intellective ones, which cut across the groups to pro-duce other classifications or categories that are equally important to consider in evaluating the individual's performance.

The tests of the <u>Wechsler Intelligence Scale for Children</u> are grouped as follows--<u>Verbal</u>: Information, Comprehension, Arithmetic, Similarities, Vocabulary, Digit Span; <u>Performance</u>: Picture Completion, Picture Arrangement, Block Design, Object Assembly, Coding, and Mazes.

In the standardization of the <u>WISC</u> all twelve tests were given to every subject; but in the interest of shortening the time required for an examination, the scale was reduced to ten tests. The two tests omitted in establishing the I.Q. tables are Digit Span in the Verbal and Mazes in the Performance part of the test. The basis for omission of these tests was primarily their relatively low correlation with the other tests of the scale and also, in the case of Mazes, the time factor.

Digit Span and Mazes (or Coding) are considered supplementary tests to be added when time permits, or used as alternate tests.

Digit Span (supplementary subtest of the <u>Wechsler Intelligence Scale for Children</u>) is given in two parts. The first part is Digits

Forward. The examiner gives digits to the subject at the rate of one per second. All subjects start with the 3-digit series and are scored as to the highest number of digits repeated without error on either of two trials. The second part is similar to the first, except the subject is required to repeat the digits backwards. Again, the testing begins with a 3-digit series, and the score is the highest number of digits repeated backwards without error. The total score for the Digit Span Test is the sum of scores on Digits Forward and Digits Backward.

Wechsler Preschool and Primary Scale of Intelligence (WPPSI)

The Wechsler Preschool and Primary Scale of Intelligence (WPPSI) is an extension of the Wechsler Intelligence Scale for Children and a separate scale designed to cope more effectively with the psychometric problems presented in testing the four to six-one-half year-old child. It consists of eleven tests, six Verbal and five Performance. Eight of the tests provide the same measures as the WISC, and may be seen as continuous with the WISC. Only five of the Verbal tests are used to determine the Verbal Score. Sentences is to be used as a supplementary test. One of the Performance tests, Animal House, was administered twice during standardization in order to estimate its reliability. The Animal House Retest is not used for determining the subject's I.Q. Thus, five tests each are used for determining the Full Scale I.Q.

The tests of the scale are grouped as follows--Verbal: Information, Vocabulary, Arithmetic, Similarities, Comprehension, and Sentences

(supplementary); <u>Performance</u>: Animal House, Picture Completion, Mazes, Geometric Design, and Block Design.

The <u>Wechsler Preschool and Primary Scale of Intelligence</u> (<u>WPPSI</u>) 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.

<u>Information</u>: 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.

<u>Vocabulary</u>: 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.

<u>Arithmetic</u>: 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 audi-

tory 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 learn-

ing 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 co-ordination 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.

Durrell Analysis of Reading Difficulty

This is an individual test designed to measure specific areas of
reading performance. The oral and silent reading sections consist of
a series of timed paragraphs of graded difficulty followed by compre-
hension questions. The word recognition and word analysis section tests
ability to identify lists of words on both flash and analysis presenta-
tions. The sound section measures the ability to hear and use the
sounds in words and the sounds in letters.

Visual Memory of Words-Primary Test. The child is presented a
letter or word stimulus card for a two to three second exposure. The
child's ability to match this exposure with other letters and words of
similar configurations is measured.

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). Mills' (1964) test was designed to
be appropriate for seven, eight, and nine year old children who had
already been exposed to reading instruction and have encountered dif-
ficulty in word recognition. Mills provided a visual, auditory,
kinesthetic, and combination approach to teaching word recognition
with the preferred method often resulting in a significant difference
in performance compared to the others. No provisions were made for
younger subjects and an uncontrolled introduction of phonetic rules are
employed which makes this test very difficult for younger children.

Ray concluded from an evaluation of methods currently available to the teacher that there appears to be four methods of reading instruction in use. These methods are identified as the Visual-Auditory, Auditory-Visual, Linguistic Word Structure, and Linguistic-Language Experience. The Ray Reading Methods Test was designed to evaluate the performance of children by measuring the response to teaching-learning experiences utilizing each of the four methods. The author stated that if a child's raw score on the seventy-two hour test of recall is seven or more out of a possible ten, the prognosis has been completed since a score of seven or more indicates that the child is predicted to be successful in this method. A score of less than seven is presumed indicative of a prognosis for difficulty and/or failure with this method.

Each of the four methods employs identical time allotments and instructional sequences, while the ten words to be taught and the specific teaching materials and procedures vary with the individual methods. The Ray Reading Methods Test was designed to be appropriate for children ages four, five, and six and can be administered in groups up to five members.

No reliability or validity data are provided by the author of the Ray Reading Methods Test in the test manual of the experimental edition. However, the Ray Reading Methods Test possesses what is termed face validity or work sample validity. A panel of three experts in reading instruction were requested to evaluate the Ray Reading Methods Test in terms of its rational or logical validity or to decide whether the Ray Reading Methods Test appears to be a reasonable method of measuring what the author is interested in. All three experts concluded that the

<u>Ray</u> <u>Reading</u> <u>Methods</u> <u>Test</u> possesses adequate face validity for use in this study.

In a random sample of thirty first graders, Manwarren (1971) reported that in the terms of reliability, a split-half reliability coefficient of .969 for the visual-auditory and .970 for the auditory-visual subtests. These coefficients were somewhat higher than the .908 for Linguistic Word Structure and .954 for the Language Experience methods.

For the purposes of the present study, all four portions of the <u>Ray</u> <u>Reading</u> <u>Methods</u> <u>Test</u> were utilized. The test manual of the <u>Ray</u> <u>Reading</u> <u>Methods</u> <u>Test</u> has provided the following descriptions of these four methods.

Test 1, Visual-Auditory - a ten item test based on the whole word unit of instruction utilizing visual (configuration, picture) and con-textual 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 con-figuration 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 for 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:

$$r = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{N\sum X^2 - (\sum X)^2}\ \sqrt{N\sum Y^2 - (\sum Y)^2}}.$$

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:

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

Further explanation of multiple correlation should be added. The amount of total 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 variable 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 equation 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, that 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:

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

$$ k \text{ - included predictor variables} $$

$$ R^2 \text{ - squared multiple correlation} $$

$$ N \text{ - number of subjects (Kerlinger, Pedhazar).} $$

Additional information, such as the means and standard deviations of the readiness variables, scoring sheets used with each individual child, summary of significant predictors for all four methods tests, and suggested administration of predictor subtests can be found in Appendix B.

Summary

Chapter III has presented a description of the variables used in the present study. The predictor variables were measured by

scores on thirty-one subtests found in the six standardized measures of predictive readiness. The criterion, or dependent variables, were measured by scores on four subtests of a reading methods test.

The subjects were 66 kindergarten students from a small Oklahoma town. The subjects represented the student population who were able to complete all phases of the experiment. These subjects were given the predictive readiness measures in January, 1975, and the reading methods tests in February, 1975.

The statistical techniques employed were a Pearson product-moment correlation, multiple correlation, and a stepwise regression.

CHAPTER IV

ANALYSIS OF THE DATA

The major purpose of the study was to identify and determine the effects of selected patterns of pre-reading abilities on kindergartener's word recognition success under four methods of teaching beginning reading. Analysis of the data was based upon the degree of 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 are reported 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 were significantly correlated to the Auditory-Visual method at the .01 level of confidence with the

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	0.344
Visual Memory	0.216
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	0.521
Arithmetic	0.478
Similarities	0.494
Comprehension	0.447
Sentences	0.504
Animal House	0.338
Picture Completion	0.415
Mazes	0.389
Geometric Design	0.361
Block Design	0.374
Receptive Word Knowledge	0.501
Digit Span	0.375
Visual Memory of Words	0.457
Phonemes Part I	0.526
Phonemes Part II	0.565
Letter Names Part I	0.406
Letter Names Part II	0.560
Learning Rate	0.632

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

exception of the three following variables: Visual Memory, Auditory

Memory, and Manual Expression. These three listed variables were

significant at the .05 level of confidence. For the criterion vari-

able, Auditory-Visual, .232 indicates the .05 level of significance

and .303 indicates the .01 level of significance.

Hypothesis I will be rejected for all the pre-reading readiness

variables.

Question I: In regard to the criterion variable, Auditory-

Visual, will there be a significant contribution

to the multiple correlation when all of the pre-

dictor variables are used in the correlation?

In the stepwise multiple regression of 31 predictor variables,

29 added to the multiple correlation. However, the two subtests

Mazes and Phonemes II added nothing of significance and were, there-

fore, not included in the multiple correlation. The predictor vari-

ables 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 vari-

able that accounted for the greatest amount of unique variance in the

criterion variable. The last predictor added contributed least to

the multiple correlation coefficient.

Of these 29 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 4.2063.

The predictor variables were then grouped to determine which ones

were accounting for the greatest degree of variance in the computed

TABLE II

RESULTS OF THE STEPWIDE CORRELATION FOR
AUDITORY-VISUAL METHOD

Readiness Variable	Multiple R	Multiple RSQ	F Ratio
Learning Rate	0.6318	0.3992	42.517*
Grammatic Closure	0.7068	0.4995	31.439*
Sound Blending	0.7364	0.5423	24.482*
Phonemes I	0.7562	0.5718	20.368*
Visual Association	0.7745	0.5998	17.986*
Vocabulary	0.7905	0.6279	16.381*
Digit Span	0.8030	0.6449	15.047
Letter Names I	0.8108	0.6574	13.671
Geometric Design	0.8231	0.6775	13.069*
Visual Reception	0.8301	0.6890	12.185
Comprehension	0.8357	0.6983	11.364
Information	0.8459	0.7155	11.109*
Similarities	0.8513	0.7246	10.526
Letter Names II	0.8568	0.7341	10.059
Arithmetic	0.8608	0.7410	9.537
Visual Closure	0.8631	0.7449	8.944
Animal House	0.8668	0.7513	8.529
Receptive Vocabulary	0.8690	0.7552	8.057*
Auditory Reception	0.8702	0.7572	7.552
Picture Completion	0.8713	0.7592	7.092
Block Design	0.8724	0.7610	6.673
Verbal Expression	0.8736	0.7631	6.296
Visual Memory	0.8752	0.7660	5.976
Auditory Memory	0.8760	0.7673	5.634
Manual Expression	0.8767	0.7687	5.317
Auditory Association	0.8772	0.7695	5.009
Auditory Closure	0.8777	0.7695	4.722
Sentences	0.8770	0.7707	4.441
Visual Memory of Words	0.8781	0.7710	4.181

* Indicates significance at the .05 level of confidence.

correlations. Table III presents the groupings of the significant 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 RSQ	Percentage of Explained Variation
Learning Rate	0.3992	52%
Grammatic Closure	0.1004	13%
Sound Blending	0.0427	6%
Phonemes I	0.0296	4%
Visual Association	0.0280	4%
Vocabulary	0.0251	3%
Receptive Vocabulary	0.0200	3%
Geometric Design	0.0201	3%
Information	0.0172	2%
		Total 90%

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: Learning Rate, Grammatic Closure, Sound Blending,

Phonemes I, Visual Association, Vocabulary, Receptive Vocabulary, Geometric Design, and Information. These predictor variables explained 90 percent of the explained variation, which is .7710.

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 Visual Closure and Auditory Memory, were significant at the .01 level of confidence; however, Visual Closure was not significant at this level. 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.

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, all 31 predictor variables were added to the multiple correlation. Of these 31 predictor variables, some variables contributed very little to the multiple R. In

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	0.453
Arithmetic	0.395
Similarities	0.470
Comprehension	0.439
Sentences	0.429
Animal House	0.399
Picture Completion	0.325
Mazes	0.308
Geometric Design	0.545
Block Design	0.360
Receptive Word Knowledge	0.515
Digit Span	0.401
Visual Memory of Words	0.504
Phonemes Part I	0.520
Phonemes Part II	0.581
Letter Names Part I	0.625
Letter Names Part II	0.652
Learning Rate	0.612

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

order to determine the variables contributing the most, an F-test was done. For the criterion variable, Visual-Auditory, a .05 level of significance for F value was determined to be 3.228.

The predictor variables which contributed significantly to the multiple correlation are presented in Table VI. 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 V presents the groupings of the significant predictor variables with the percentages and amount of variance as it significantly contributed to the multiple R.

TABLE V

SUMMARY OF SIGNIFICANT PREDICTORS
FOR VISUAL-AUDITORY METHOD

Significant Predictor	Increase in RSQ	Percentage of Explained Variation
Letter Names II	0.4249	58%
Geometric Design	0.1005	14%
Learning Rate	0.0345	5%
Auditory Association	0.0302	5%
Mazes	0.0169	2%
Picture Completion	0.0141	2%
Visual Reception	0.0140	2%
		Total 88%

TABLE VI

RESULTS OF THE STEPWISE CORRELATION FOR
VISUAL-AUDITORY METHOD

Readiness Variable	Multiple R	Multiple RSQ	F Ratio
Letter Names II	0.6518	0.4249	47.280*
Geometric Design	0.7248	0.5253	34.864*
Learning Rate	0.7482	0.5598	26.285*
Auditory Association	0.7681	0.5900	21.946*
Manual Expression	0.7770	0.6037	18.280
Mazes	0.7878	0.6206	16.083*
Information	0.7960	0.6337	14.331
Picture Completion	0.8048	0.6477	13.100*
Visual Closure	0.8113	0.6582	11.981
Visual Reception	0.8199	0.6722	11.277*
Visual Memory	0.8254	0.6813	10.494
Phonemes I	0.8294	0.6819	9.736
Verbal Expression	0.8333	0.6843	9.086
Auditory Reception	0.8386	0.7032	8.453
Block Design	0.8405	0.7065	7.370
Letter Names I	0.8427	0.7102	6.920
Receptive Vocabulary	0.8449	0.7139	6.516
Sentences	0.8480	0.7191	6.198
Phonemes II	0.8496	0.7218	6.684
Animal House	0.8514	0.7249	6.281
Grammatic Closure	0.8526	0.7269	5.929
Digit Span	0.8539	0.7291	5.596
Sound Blending	0.8552	0.7313	5.212
Similarities	0.8561	0.7329	4.971
Visual Memory	0.8570	0.7344	4.687
Vocabulary	0.8572	0.7348	4.424
Auditory Closure	0.8574	0.7351	4.157
Auditory Memory	0.8575	0.7353	3.906
Letter Names II	0.8576	0.7355	3.671
Comprehension	0.8577	0.7356	3.451
Arithmetic	0.8578	0.7357	3.246

* Indicates significance at the .05 level of confidence.

With the Visual-Auditory method of teaching reading as the criterion variable, significant predictor variables were: Letter Names II, Geometric Design, Learning Rate, Auditory Association, Mazes, Picture Completion, and Visual Reception. These predictor variables explained 88 percent of the explained variation, which is .7357.

<center>Results Related to Hypothesis III

and Question III</center>

Hypothesis III: There is no significant relationship between the scores on the pre-reading readiness variables and reaching 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 two, were significant at the .01 level of confidence to the criterion variable. Visual Reception was significant at the .05 level of confidence, while Manual Expression 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.

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

TABLE VII

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

Readiness Variable	Correlation Coefficient Linguistic Word Structure Method
Auditory Reception	0.411
Visual Reception	0.283
Visual Memory	0.376
Auditory Association	0.618
Auditory Memory	0.308
Visual Association	0.343
Visual Closure	0.326
Verbal Expression	0.393
Grammatic Closure	0.580
Manual Expression	0.111
Auditory Closure	0.383
Sound Blending	0.524
Information	0.465
Vocabulary	0.361
Arithmetic	0.325
Similarities	0.329
Comprehension	0.325
Sentences	0.335
Animal House	0.497
Picture Completion	0.560
Mazes	0.488
Geometric Design	0.385
Block Design	0.414
Receptive Word Knowledge	0.382
Digit Span	0.473
Visual Memory of Words	0.555
Phonemes Part I	0.661
Phonemes Part II	0.772
Letter Names Part I	0.737
Letter Names Part II	0.690
Learning Rate	0.613

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

In the stepwise multiple regression of the 31 predictor variables, 29 added to the multiple correlation. The two subtests Geometric Design and Block Design 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 29 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 done. For the criterion variable Linguistic Word Structure, a .05 level of significance for F value was determined to be 7.1219.

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 percentage 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: Letter Names II, Learning Rate, Picture Completion, Animal House, Sentences, Auditory Association, Phonemes II, Grammatic Closure, and Auditory Closure. These predictor variables explained 95 percent of the explained variation, which was .8491.

TABLE VIII

RESULTS OF THE STEPWISE CORRELATION FOR
LINGUISTIC WORD STRUCTURE METHOD

Readiness Variable	Multiple R	Multiple RSQ	F Ratio
Letter Names II	0.7722	0.5963	94.544*
Learning Rate	0.8244	0.6797	66.842*
Picture Completion	0.8444	0.7131	51.360*
Animal House	0.8577	0.7356	42.429*
Sentences	0.8683	0.7539	36.754*
Auditory Association	0.8784	0.7716	33.213*
Phonemes II	0.8894	0.7910	31.351*
Sound Blending	0.8928	0.7971	27.995
Visual Reception	0.8964	0.8036	25.453
Grammatic Closure	0.9010	0.8118	23.727*
Auditory Closure	0.9050	0.8190	22.212*
Auditory Reception	0.9073	0.8233	20.576
Verbal Expression	0.9089	0.8262	19.012
Comprehension	0.9105	0.8291	17.671
Information	0.9118	0.8314	16.440
Receptive Vocabulary	0.9141	0.8355	15.558
Mazes	0.9149	0.8371	14.511
Visual Association	0.9157	0.8386	13.566
Arithmetic	0.9164	0.8399	12.679
Visual Closure	0.9172	0.8412	11.923
Manual Expression	0.9178	0.8424	11.203
Similarities	0.9193	0.8451	10.666
Letter Names I	0.9200	0.8464	10.059
Vocabulary	0.9205	0.8473	9.478
Digit Span	0.9207	0.8477	8.907
Phonemes I	0.9209	0.8481	8.377
Visual Memory of Words	0.9211	0.8483	7.873
Visual Memory	0.9213	0.8487	7.414
Auditory Memory	0.9214	0.8491	6.983

* Indicates significance at the .05 level of confidence.

TABLE IX

SUMMARY OF SIGNIFICANT PREDICTORS
FOR LINGUISTIC WORD STRUCTURE

Significant Predictor	Increase in RSQ	Percentage of Explained Variation
Letter Names II	0.5963	70%
Learning Rate	0.0834	10%
Picture Completion	0.0334	4%
Animal House	0.0225	3%
Sentences	0.0183	2%
Auditory Association	0.0177	2%
Phonemes II	0.0194	2%
Grammatic Closure	0.0083	1%
Auditory Closure	0.0072	1%
		Total 95%

Results Related to Hypothesis IV

and Question IV

Hypothesis IV: There is no significant relationship between
the scores on the pre-reading readiness vari-
ables 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 of the readiness variables were significant at the .01

level of confidence, with the exception of Auditory Reception and

Visual Closure. These two variables were significant at the .05 level

of confidence. Manual Expression was not significant at either level.

For the criterion variable Linguistic-Language Experience, .232 in-

dicates the .05 level of significance and .303 indicates the .01 level

of significance.

Hypothesis IV will be rejected for all the pre-reading variables

with the exception of 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 used in the cor-
>
> relation?

In the stepwise multiple regression of the 31 predictor variables,

28 added to the multiple correlation. Three variables, Auditory

Association, Similarities, and Picture Completion, added nothing of

significance and were, therefore, not included in the multiple correla-

tion. The predictor variables which contributed significantly to the

multiple correlation are presented in Table XI. In order to determine

the predictor variables contributing the most, an F-test was done.

For the criterion variable Linguistic-Language Experience, a .05 level

of significance for F value was determined to be 3.633.

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

TABLE X

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

Readiness Variable	Correlation Coefficient Linguistic-Language Experience Method
Auditory Reception	0.302
Visual Reception	0.304
Visual Memory	0.435
Auditory Association	0.500
Auditory Memory	0.314
Visual Association	0.341
Visual Closure	0.255
Verbal Expression	0.408
Grammatic Closure	0.405
Manual Expression	0.177
Auditory Closure	0.378
Sound Blending	0.573
Information	0.494
Vocabulary	0.381
Arithmetic	0.427
Similarities	0.398
Comprehension	0.391
Sentences	0.420
Animal House	0.477
Picture Completion	0.400
Mazes	0.464
Geometric Design	0.562
Block Design	0.355
Receptive Word Knowledge	0.408
Digit Span	0.471
Visual Memory of Words	0.593
Phonemes Part I	0.527
Phonemes Part II	0.630
Letter Names I	0.673
Letter Names II	0.679
Learning Rate	0.590

.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 RSQ	F Ratio
Learning Rate	0.6725	0.4523	52.845*
Sound Blending	0.7286	0.5309	34.648*
Animal House	0.7569	0.5729	27.724*
Visual Memory	0.7759	0.6020	23.068*
Information	0.7852	0.6166	19.297
Auditory Reception	0.7997	0.6396	17.450*
Letter Names II	0.8069	0.6510	15.457
Letter Names I	0.8117	0.6588	13.757
Verbal Expression	0.8164	0.6666	12.438
Arithmetic	0.8200	0.6724	11.286
Visual Memory of Words	0.8239	0.6788	10.373
Grammatic Closure	0.8281	0.6858	9.641
Phonemes I	0.8320	0.6921	8.993
Geometric Design	0.8360	0.6989	8.455
Phonemes I	0.8320	0.6921	7.908
Geometric Design	0.8360	0.6989	7.366
Digit Span	0.8387	0.7035	7.908
Comprehension	0.8404	0.7063	7.366
Mazes	0.8429	0.7105	6.930
Manual Expression	0.8439	0.7121	6.459
Visual Closure	0.8447	0.7135	6.030
Auditory Memory	0.8456	0.7150	5.645
Sentences	0.8467	0.7169	5.305
Phonemes II	0.8474	0.7180	4.977
Visual Association	0.8480	0.7192	4.677
Vocabulary	0.8487	0.7202	4.398
Receptive Vocabulary	0.8493	0.7213	4.140
Block Design	0.8497	0.7221	3.897
Auditory Closure	0.8500	0.7225	3.664
Visual Reception	0.8502	0.7229	3.604

* Indicates significance at the .05 level of confidence.

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

TABLE XII

SUMMARY OF SIGNIFICANT PREDICTORS FOR
LINGUISTIC-LANGUAGE EXPERIENCE

Significant Predictor	Increase in RSQ	Percentage of Explained Variation
Learning Rate	0.4523	63%
Sound Blending	0.0786	11%
Animal House	0.0420	6%
Visual Memory	0.0291	4%
Auditory Reception	0.0230	3%
		Total 87%

With the Linguistic-Language Experience method of teaching reading as the criterion variable, significant predictor variables were: Learning Rate, Sound Blending, Animal House, Visual Memory, and Auditory Reception. These predictor variables explained 87 percent of the explained variation, which was .7229.

Summary

The results of the statistical treatment of the data were presented in this chapter. Pearson product-moment correlation, multiple correlation, and stepwise multiple regression were used to test the

hypotheses regarding each predictor variable being studied. Predictor variables were tested when grouped and these correlations were reported.

Pre-reading readiness variables making a significant contribution to the multiple R for the Auditory-Visual method of teaching reading were Learning Rate, Grammatic Closure, Sound Blending, Phonemes I, Visual Association, Vocabulary, Receptive Vocabulary, Geometric Design, and Information. A summary of these significant predictors is found in Table VII.

Pre-reading readiness variables making a significant contribution to the multiple R for the Visual-Auditory method of teaching reading were Letter Names II, Geometric Design, Learning Rate, Auditory Association, Mazes, Picture Completion, and Visual Reception. A summary of these significant predictors is found in Table VIII.

Pre-reading readiness variables making a significant contribution to the multiple R for the Linguistic Word Structure method of teaching reading were Letter Names II, Learning Rate, Picture Completion, Animal House, Sentences, Auditory Association, Phonemes II, Grammatic Closure, and Auditory Closure. A summary of these significant predictors is found in Table IX.

Pre-reading readiness variables making a significant contribution to the multiple R for the Linguistic-Language Experience method of teaching reading were Learning Rate, Sound Blending, Animal House, Visual Memory, and Auditory Reception. A summary of these significant predictors is found in Table X.

CHAPTER V

SUMMARY, RECOMMENDATIONS, AND CONCLUSIONS

Summary

The purpose of this study was to ascertain the predictive relationship of certain pre-reading variables to reading achievement in kindergarten children.

Four hypotheses were presented in the null form concerning the predictive relationship of the pre-reading variables to each of the four criterion variables. These hypotheses were 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.

All of the predictor variables were significantly correlated to the Auditory-Visual method at the .01 level of confidence with the exception of the three following variables: Visual Memory, Auditory Memory, and Manual Expression. These three listed variables were significant at the .05 level of confidence.

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.

All of the predictor variables, with the exception of Visual Closure and Auditory Memory, were significantly correlated to the

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Visual-Auditory method at the .01 level of confidence; however, Visual Closure was not significant at this level.

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.

All predictor variables, with the exception of two, were significantly correlated to the Linguistic Word Structure method at the .01 level of confidence. Visual Reception was significant at the .05 level of confidence, while Manual Expression did not show significance at this level.

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.

All of the predictor variables were significantly correlated to the Linguistic-Language Experience method at the .01 level of confidence, with the exception of Auditory Reception and Visual Closure. These two variables were significant at the .05 level of confidence. Manual Expression was not significant at either level.

This study investigated the relationship between four criterion variables and 31 predictor variables. The data used in this study was collected from 66 subjects who were administered several subtests that were used as the predictor variables. The four subtests from a reading methods test were used as the criterion variables.

Recommendations

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 used in the correlation?

This study indicated that the patterns of behavior most predictive of success with the beginning reader using the Auditory-Visual method of reading instruction and making a significant contribution to the multiple R were Grammatic Closure, Sound Blending, and Visual Association taken from the Illinois Test of Psycholinguistic Abilities; Vocabulary, Geometric Design, and Information taken from the Wechsler Preschool Primary Scale of Intelligence; Phonemes I and Learning Rate taken from the Murphy-Durrell Reading Readiness Analysis; and the Receptive Vocabulary obtained from the Peabody Picture Vocabulary Test.

In a companion study, Treadway (1975), included subtests from the Metropolitan Reading Readiness Test. Those subtests considered most predictive and contributing significantly to the multiple R of the Auditory-Visual method were Grammatic Closure, Visual Association, and Auditory Reception from the Illinois Test of Psycholinguistic Abilities; Numbers, Alphabet, and Matching from the Metropolitan Reading Readiness Test; Vocabulary from the Wechsler Preschool and Primary Scale of Intelligence; and Receptive Vocabulary which is from the Peabody Picture Vocabulary Test. Common predictors from both studies were Grammatic Closure, Sound Blending, Visual Association, Vocabulary, and Receptive

Vocabulary. It is recommended that subtests Numbers, Alphabet, and Matching be utilized from the Metropolitan Reading Readiness Test to add to the prediction of success with the Auditory-Visual method of reading. A summary of these variables is given in Table XIII.

Since specially trained personnel is not readily available to all schools, the classroom teacher could administer those selected portions from the Wechsler Intelligence Scale for Children, the Durrell Analysis of Reading Difficulty, and the Peabody Picture Vocabulary Test. Both of the readiness tests, Murphy-Durrell Reading Readiness Analysis and the Metropolitan Reading Readiness Test, are considered group tests and could be given by the classroom teacher. The administration of these suggested subtests are listed in Table XIX, Appendix B.

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

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?

The study indicated that the patterns of behavior most predictive of success with the beginning reader using the Visual-Auditory method of reading instruction and making a significant contribution to the multiple R were Auditory Association and Visual Reception from the Illinois Test of Psycholinguistic Abilities; Geometric Design, Mazes, and Picture Completion taken from the Wechsler Preschool Primary Scale of Intelligence; and Letter Names II and Learning Rate from the Murphy-Durrell Reading Readiness Analysis.

TABLE XIII

SIGNIFICANT PREDICTORS FOR AUDITORY-VISUAL
METHOD OF TWO INVESTIGATIONS

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

* Indicates common predictors for both studies

Treadway's (1975) study included contributing subtests from the
Metropolitan Reading Readiness Test. Those subtests considered most
predictive and contributing significantly to the multiple R of the
Visual-Auditory method were Visual Closure and Auditory Reception from
the Illinois Test of Psycholinguistic Abilities; Geometric Design and
Similarities from the Wechsler Preschool Primary Scale of Intelligence;
Alphabet and Word Meaning taken from the Metropolitan Reading Readiness
Test; and Visual Memory of Words taken from the Durrell Analysis of
Reading Difficulty. Both studies included one common predictor for the
Visual-Auditory method of reading, the subtest Geometric Design. All
of the other indicated subtests from the Metropolitan Reading Readiness
Test would add to the prediction of success with this method. A summary
of these variables is given in Table XIV.

The classroom teacher could administer those tests and subtests
listed in Table XIX, Appendix B. She could then utilize this informa-
tion and establish methodology procedures for the instruction of reading.

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

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 used in the correla-
tion?

The study indicated the patterns of behavior most predictive of
success with the beginning reader using the Linguistic Word Structure
method of reading instruction and making a significant contribution to
the multiple R were Auditory Association, Grammatic Closure, and

TABLE XIV

SIGNIFICANT PREDICTORS FOR VISUAL-AUDITORY
METHOD OF TWO INVESTIGATIONS

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

* Indicates common predictor for both studies

Auditory Closure from the <u>Illinois</u> <u>Test</u> <u>of</u> <u>Psycholinguistic</u> <u>Abilities</u>;
Picture Completion, Animal House, and Sentences from the <u>Wechsler</u> <u>Pre-</u>
<u>school</u> <u>Primary</u> <u>Scale</u> <u>of</u> <u>Intelligence</u>; and Letter Names II, Learning
Rate, and Phonemes II taken from the <u>Murphy-Durrell</u> <u>Reading</u> <u>Readiness</u>
<u>Analysis</u>.

Subtests contributing significantly to the multiple R in Treadway's
(1975) study were Alphabet, Picture Completion, Sound Blending, Animal
House, Sentences, Grammatic Closure, Matching, Copying, Visual Recep-
tion, Numbers, and Manual Expression. The subtests from the <u>Illinois</u>
<u>Test</u> <u>of</u> <u>Psycholinguistic</u> <u>Abilities</u> were Sound Blending, Grammatic
Closure, Visual Reception, and Manual Expression. Animal House, Picture
Completion, and Sentences were subtests from the <u>Wechsler</u> <u>Preschool</u>
<u>Primary</u> <u>Scale</u> <u>of</u> <u>Intelligence</u>. The subtests Alphabet, Matching, Copy-
ing, and Numbers were from the <u>Metropolitan</u> <u>Reading</u> <u>Readiness</u> <u>Test</u>.
Common predictors for both studies were Picture Completion, Animal House,
Sentences, and Grammatic Closure; a summary of these is in Table XV.

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

Although the classroom teacher might not be able to administer the
subtests from the <u>Illinois</u> <u>Test</u> <u>of</u> <u>Psycholinguistic</u> <u>Abilities</u> or
<u>Wechsler</u> <u>Preschool</u> <u>Primary</u> <u>Scale</u> <u>of</u> <u>Intelligence</u>, again she could
obtain some predictive scores from both of the readiness tests and
selected subtests as listed in Table XIX, Appendix B.

Question IV: In regard to the criterion variable, Linguistic-
Language Experience, will there be a significant contribution to the

TABLE XV

SIGNIFICANT PREDICTORS FOR LINGUISTIC WORD
STRUCTURE METHOD OF TWO INVESTIGATIONS

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

* Indicates common predictors for both studies

multiple correlation when all of the predictor variables are used in the correlation?

Finally, the study indicated the patterns of behavior most predictive of success with the beginning reader using the Linguistic-Language Experience method of reading instruction and making a significant contribution to the multiple R were Learning Rate, Sound Blending, Animal House, Visual Memory, and Auditory Reception. Sound Blending, Visual Memory, and Auditory Reception are taken from the Illinois Test of Psycholinguistic Abilities. Animal House is from the Wechsler Preschool Primary Scale of Intelligence and Learning Rate from the Murphy-Durrell Reading Readiness Analysis.

Treadway's (1975) study found that the following subtests contributed significantly to the multiple R of the Linguistic-Language Experience method: Sound Blending, Auditory Reception, and Manual Expression from the Illinois Test of Psycholinguistic Abilities; Picture Completion and Information from the Wechsler Preschool Primary Scale of Intelligence; and Numbers, Alphabet, and Matching from the Metropolitan Reading Readiness Test. Common predictors for both studies were Sound Blending and Auditory Reception. A summary of these variables is given in Table XVI.

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

It is recommended that the classroom teacher become familiar with the described instruments used in this study. If provisions are not available to the school for specialized services, the teacher could

TABLE XVI

SIGNIFICANT PREDICTORS FOR LINGUISTIC-
LANGUAGE EXPERIENCE METHOD
OF TWO INVESTIGATIONS

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

* Indicates common predictors for both studies

utilize the suggested tests that require no special training for administration.

The results from this type of testing and evaluation could then serve as a guideline for the selection of the proper method of reading instruction and give specific direction to correction and remediation of the child's indicated disabilities. Table XIX in Appendix B gives the suggested administration of the predictive subtests by either the classroom teacher or a specialized administrator.

Conclusions

The present study was designed to study the relationship of 31 reading readiness variables as predictors of reading achievement at the kindergarten level. Attention was given to early diagnosis of the beginning reader and an attempt made to determine the child's preferred method of learning to read.

It was determined that some of the predictor variables were more significantly related to a particular method of reading than were others. Although a correlation was found to exist between most of these readiness variables and each of the four criterion variables, it was evident that each of the methods produced a limited number of significantly contributing predictor variables.

All four criterion variables, Auditory-Visual, Visual-Auditory, Linguistic Word Structure, and Linguistic-Language-Experience, were closely related to the child's ability to remember specific words taught and delayed recall. This learning rate subtest could, therefore, be considered as one of the most valuable predictors for all methods of beginning reading. Both studies indicated that the child

should know both the capital and lower case letters of the alphabet for all four of the presented methods.

Knowledge of the alphabet in both lower case and capital form appears to be related to all methods of beginning reading. This would indicate that a child must possess some basic subabilities related to the acquisition of these specific skills before formal instruction of reading is initiated.

All subtests of the Illinois Test of Psycholinguistic Abilities were exposed as being significant contributors of predicting reading success in both companion studies. It could be concluded from this study that this instrument does contain underlying factors related to the reading act.

All of the subtests of the Murphy-Durrell Reading Readiness Analysis, with the exception of Letter Names I, were indicated as significant predictors in all four methods. Auditory and visual tasks were both indicative of success in all methods as measured by the Wechsler Preschool Primary Scale of Intelligence and the Peabody Picture Vocabulary Test.

The results of this investigation indicate that utilization of the significant subtests for each method could be used as predictors of success with that particular method of reading instruction. Results from these selected predictors could be the basis of remediation and skill acquisition before formal reading instruction is initiated.

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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

SUPPLEMENTARY DATA

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)

Murphy-Durrell Reading Readiness Analysis
    Phonemes Part I   _____   (27)
    Phonemes Part II   _____   (28)
    Letter Names Part I   _____   (29)
    Letter Names Part II   _____   (30)
    Learning Rate   _____   (31)

<u>Ray</u> <u>Reading</u> <u>Methods</u> <u>Test</u>

    Auditory-Visual   _____ (32)

    Visual-Auditory   _____ (33)

    Linguistic Word Structure   _____ (34)

    Linguistic-Language Experience   _____ (35)

TABLE XVII

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	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	17.075	7.060
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	3.934
Block Design	11.242	3.934
Receptive Word Knowledge	6.363	2.050
Digit Span	57.454	6.295
Visual Memory of Words	6.090	2.623
Phonemes Part I	15.106	4.861
Phonemes Part II	19.727	6.434
Letter Names Part I	22.196	5.676
Letter Names Part II	18.545	5.881
Learning Rate	10.575	4.597

TABLE XVIII

SUMMARY OF SIGNIFICANT PREDICTORS OF
THE RAY READING METHODS TEST

Auditory-Visual Method	Visual-Auditory Method	Linguistic Word Structure Method	Linguistic-Language Experience Method
Significant Predictor	Significant Predictor	Significant Predictor	Significant Predictor
Learning Rate, MD	Letter Names II, MD	Letter Names II, MD	Learning Rate, MD
Grammatic Closure, ITPA	Geometric Design, WPPSI	Learning Rate, MD	Sound Blending, ITPA
Sound Blending, ITPA	Learning Rate, MD	Picture Completion, WPPSI	Animal House, WPPSI
Phonemes I, MD	Auditory Association, ITPA	Animal House, WPPSI	Visual Memory, ITPA
Visual Association, ITPA	Mazes, WPPSI	Sentences, WPPSI	Auditory Reception, ITPA
Vocabulary, WPPSI	Picture Completion, WPPSI	Auditory Association, ITPA	
Receptive Vocabulary, PPVT	Visual Reception, ITPA	Phonemes II, MD	
Geometric Design, WPPSI		Grammatic Closure, ITPA	
Information, WPPSI		Auditory Closure, ITPA	

ITPA = Illinois Test of Psycholinguistic Abilities
  MD = Murphy-Durrell Reading Readiness Analysis
PPVT = Peabody Picture Vocabulary Test
WPPSI = Wechsler Preschool and Primary Scale of Intelligence

TABLE XIX

ADMINISTRATION OF THE PREDICTIVE BATTERIES

Classroom Teacher	Specialized Administrator

Peabody Picture Vocabulary Test

Wechsler Intelligence Scale for
Children
    (Digit Span)

Durrell Analysis of Reading
Difficulty
    (Visual Memory of Words)

Murphy-Durrell Reading Readiness
Analysis
    (Learning Rate)
    (Phonemes I)
    (Phonemes II)
    (Letter Names II)

Metropolitan Reading Readiness
Test
    (Alphabet)
    (Numbers)
    (Matching)
    (Word Meaning)

Illinois Test of Psycholinguistic
Abilities
    (Auditory Reception)
    (Visual Reception)
    (Visual Memory)
    (Auditory Association)
    (Auditory Memory)
    (Visual Association)
    (Visual Closure)
    (Verbal Expression)
    (Grammatic Closure)
    (Manual Expression)
    (Auditory Closure)
    (Sound Blending)

Wechsler Preschool Primary Scale
of Intelligence
    (Vocabulary)
    (Information)
    (Similarities)
    (Sentences)
    (Animal House)
    (Picture Completion)
    (Mazes)
    (Geometric Design)

VITA λ

Dorothy June Young

Candidate for the Degree of

Doctor of Education

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

Major Field: Elementary Education

Biographical:

Personal Data: Born in Ulysses, Kansas, May 31, 1931, daughter of
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Education: Attended public schools in Kay County, Oklahoma.
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