THE RELATIONSHIP BETWEEN DISTRACTIBILITY AND SUCCESS OF KINDERGARTEN CHILDREN WITH SPECIFIC READING METHODS

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CHAPTER I

INTRODUCTION

Preventing a reading disability is preferable to treating one. In order to prevent a disability from occurring, information relative to causation needs to be considered. Early identification of characteristics within an individual which are predictive of reading failure is necessary in order that intervention in or adjustments to the instructional process can be made for these individuals.

Distractibility seems to be a factor which contributes to reading failure in some children (Smith, 1979). Smith found that Kaufman's freedom from distractibility factor on the Wechsler Intelligence Scale for Children-Revised discriminated between able and disabled readers at the second grade level. Other researchers have found that disabled readers consistently score low on the Wechsler Intelligence Scale for Children subtests which comprise the freedom from distractibility factor, i.e., Arithmetic, Digit Span, and Coding (Graham, 1952; Hirst, 1960; McDonald, 1964; Sawyer, 1965; Coleman, 1963; Robeck, 1963; Keogh, 1972; McLeod, 1965). If children who are distractible could be identified at an early age and instruction adjusted to fit their needs, reading disability for them might be prevented.

The identification of kindergarten children who are distractible has previously not been feasible because tests which have been factor analyzed have not yielded a freedom from distractibility factor for this

age group. Factor analytic studies of the Wechsler Intelligence Scale for Children, the Wechsler Intelligence Scale for Children-Revised, and the Wechsler Intelligence Scale for Adults have yielded a freedom from distractibility factor for ages 6½-16½, but the Wechsler Preschool and Primary Scale of Intelligence did not produce such a factor.

The freedom from distractibility factor was named as such by both Cohen (1959) and Kaufman (1975) because it reflects concentration, selective attention and distractibility. However, this factor has not always been named freedom from distractibility. Cohen (1959) reports that it has been named memory, freedom from distractibility, attention-concentration, and concentration-speed. Cohen suggests that these concepts are not as diverse as they may seem because "rote memory requires as a precondition the ability to remain undistracted (to attend or concentrate)" (p. 288). Cohen first termed the freedom from distractibility factor a memory factor but later said this was an error "primarily due to the loadings of subtests which clearly do not involve memory (Mazes, Picture Arrangement, Object Assembly), but which it seems reasonable to suppose are quite vulnerable to the effects of distractibility" (p. 288).

When a factor analysis of a test is conducted, the naming of the factor is the prerogative of the researcher. Uhl and Nurse (1970) offer this explanation for common factors being named differently.

> Although factor analysis is mathematical, it involves considerable judgement in naming the resulting factors. In fact, it is possible that two people working independently with the same factor loadings might name a factor differently (p. 479).

Therefore, the possibility exists that some of the tests which have been factor analyzed for this age group may in fact possess a freedom

from distractibility factor which has been given a different name, i.e., memory. Such is the case with Kaufman's factor analysis of the McCarthy Scale of Children's Abilities. Kaufman (1979) states that the McCarthy Scale is a natural instrument to explore the factor freedom from distractibility in young children; especially the factors which he labeled memory and quantitative for the ages 5-5½ and 6½-8½. He states that the short-term memory tasks of the McCarthy Scale are vulnerable to the effects of distractibility and with reference to the quantitative scale Kaufman says, "Attention and concentration are also important ingredients for success, just as they are for Wechsler's Arithmetic and Digit Span tests" (Kaufman, 1977, p. 92). Tests of mental arithmetic join memory tasks as being the most susceptible to distractibility (Cohen, 1959; Wender, 1971, pp. 88-93).. Although Kaufman did not choose to give the name freedom from distractibility to a factor on the McCarthy Scale of Children's Abilities, it seems that the factors memory and quantitative are highly susceptible to distractibility.

The subtests specifically suggested by Kaufman (1980) as the best measures of distractibility in kindergarten children are: Pictorial Memory, Tapping Sequence, Number Questions, and Imitative Action. The assumption is: those children having low scores on these four subtests are distractible; children whose scores are high are free from distractibility. Therefore, these four subtests were selected for this study to be used as a measure of distractibility.

Distractibility has been defined in various ways in the literature. Humphrey (1978) points this out by stating,

> The investigation of distractibility has been haphazard with little generalizability of results . . . whether children are

> found to be distractible seems to depend upon the investigator's concept of distractibility and resulting measures employed (p. 20).

The most widely accepted definition appears to be: the failure to consistently select and/or focus attention on the appropriate stimulus from an environment of conflicting stimuli. Kaufman (1979, p. 81) refers to distractibility as " . . . evidenced by inability to focus attention on the task at hand, overattentiveness to irrelevant stimuli in the environment . . ."

Humphrey (1979) defines distractibility as:

> . . . the processing of non-target information resulting in the disruption of target information processing and thus a task performance decrement. The extent of the performance decrement is a measure of the degree of distraction (p. 20).

These definitions are consistent with those of earlier writers. Frierson and Barbe (1967, p. 491) defined distractibility as "the tendency for one's attention to be easily drawn to extraneous stimuli or to focus on minor details with a lack of attention to major aspects."

Failure to focus upon the relevant stimuli not only hinders children in the act of reading itself (by distracting them from the word or phrase to be read) but also in the process of learning how to read (Denney, 1974). Therefore, in order to be successful with the reading act, children must be relatively free from distractibility.

Children differ in the style with which they approach problems. It is possible that some children are being taught to process information in ways which are counteractive to their particular learning style. Distractibility may influence the way in which a child processes the printed word and derives meaning from it (Shaw, 1979). The possibility exists that distractible children experience reading failure because

they have not been given the opportunity to utilize their unique learning preference. Instruments currently being used to identify learning preference may penalize the distractible child by the inclusion of certain test items which are vulnerable to the effects of distractibility; thus, the learning preference of children who are distractible fails to be correctly identified. In order to help distractible children become successful readers, more information is needed about their learning preference.

Purpose of the Study

The purpose of this study was to investigate the relationships between distractibility and success with reading when differentiated methods of instruction are identified for kindergarten children.

Statement of the Problem

There is a relationship between distractibility and reading disability at the second grade level (Smith, 1979). If children could be identified as distractible at the pre-reading level and reading instruction tailored to accommodate their particular needs, perhaps for some, reading failure could be avoided. This study was designed to determine the existence of a relationship between distractibility and learner preference for particular methods of reading instruction.

Hypotheses one through four were tested using an average of the student's standard scores on the McCarthy Scale of Children's Abilities as a measure of distractibility.

Hypotheses

Hypothesis I: There is no significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and word recognition scores for children taught using the Auditory-Visual Method of teaching reading.

Hypothesis II: There is no significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and word recognition scores for children taught using the Visual-Auditory Method of teaching reading.

Hypothesis III: There is no significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and word recognition scores for children taught using the Linguistic Word Structure Method of teaching reading.

Hypothesis IV: There is no significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and word recognition scores for children taught using the Language Experience Method of teaching reading.

Hypotheses five through eight were tested using standard scores on each of the four McCarthy Scale of Children's Abilities subtests.

Hypothesis V: A linear least squares combination of scores on selected subtests from the McCarthy Scale of Children's Abilities is not predictive of word recognition scores

for children taught using the Auditory-Visual Method of teaching reading.

Hypothesis VI: A linear least squares combination of scores on selected subtests from the McCarthy Scale of Children's Abilities is not predictive of word recognition scores for children taught using the Visual-Auditory Method of teaching reading.

Hypothesis VII: A linear least squares combination of scores on selected subtests from the McCarthy Scale of Children's Abilities is not predictive of word recognition scores for children taught using the Linguistic Word Structure Method of teaching reading.

Hypothesis VIII: A linear least squares combination of scores on selected subtests from the McCarthy Scale of Children's Abilities is not predictive of word recognition scores for children taught using the Language Experience Method of teaching reading.

Definitions of Terms

Distractibility

Distractibility is defined as the inconsistency in the selection of appropriate stimulus, and/or the inconsistency in focusing attention on the appropriate stimulus as measured by scores on four subtests of the McCarthy Scale of Children's Abilities. The four subtests specifically recommended by Kaufman (1980) are Pictorial Memory, Tapping Sequence, Number Questions, and Imitative Action.

Learning Preference

Learning preference is the method of teaching reading by which the individual experiences the greatest degree of success.

Auditory-Visual Method (Ray Reading Methods Test)

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

Visual-Auditory Method (Ray Reading Methods Test)

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

Linguistic Word Structure Method (Ray Reading Methods Test)

The Linguistic Word Structure method of reading instruction has the word pattern as the basic unit of instruction where letter names are taught and spelling patterns are accumulated. A learner generalized minimum contrast approach to decoding is used. Utilization of skill in

early application is restricted to words having consistent spelling patterns.

Language Experience Method (Ray Reading Methods Test)

The Language Experience method of reading instruction utilizes the meaningful structure of the learner's own language to provide the basic unit of instruction 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.

Limitations of the Study

This study was limited by the population which was representative of the two communities involved in the study. The majority of the students in the sample were Caucasian. The study was also limited to a specific geographic area.

No attempt was made to control for beginning reading instruction taking place at school or at home although all subjects were determined to be non-readers. Prior knowledge of letter names and sounds was not controlled.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

A review of the literature reveals only a few studies which relate distractibility to the reading process. The majority of distractibility studies have centered around the learning disabled assuming that as a group, learning disabled children are more distractible than normal children. These have included studies of figure-ground perception or embeddedness, incidental learning and performance under various distracting conditions such as flashing lights, extraneous color cues, etc. (Tarver and Hallohan, 1974).

Doleys (1976) reviewed the literature on distractibility for the purpose of illustrating the inconsistencies and contradictions of the data and to question the validity of the concept of distractibility as used in the studies. This review led Doleys to conclude that "the data suggests there is no diagnostic group of children who can currently be classified as distractible, and no given stimulus event which can be identified as inherently distracting" (p. 285). The inconsistencies and contradictions which led him to this conclusion were a result of researchers' use of a wide range of subjects, experimental tasks, types of distractors and dependent measures.

In reference to Doleys' review, Patton and Offenbach (1978) state that very little is known about the parameters of distractibility in this group of (learning disabled) children. They go on to say,

> The question is not whether learning disabled children are more distractible. Rather a major focus of research should be the identification of subject variables that are useful for predicting distractibility within the population (p. 788).

Some researchers have investigated distractibility as a component of attention. This seems appropriate in that children who are distractible do have difficulty with attention and concentration, and the ability to attend and concentrate is basic to the reading act. In fact, it could well be the single most important variable in the process of learning. Estes (1970) suggests that attention may be of more value in explaining variations in rate of learning than is a difference in intelligence. This view is supported by Malmquist (1958) who found a weakness in ability to concentrate and in persistence was among the personal characteristics that distinguish children with reading disabilities in first grade. Inattention rather than lack of basic ability may be responsible for failure in any kind of test situation or learning situation (Harris and Sipay, 1975). Noland and Schuldt (1971) found that children with reading disabilities were less able to sustain attention in a non-reading situation than normal readers. They further suggest that the most frequently observed and reported characteristic of disabled readers is the inability to sustain attention and concentration, and that the ability to sustain attention is often mentioned but inadequately investigated.

The literature reviewed for this study includes research which lends support to the developmental nature of distractibility and studies

which investigate distractibility as a component of attention with the underlying assumption that distractibility affects a child's ability to attend to relevant stimuli. Also included in the review is research dealing with learning preference.

The Developmental Nature of Distractibility

Researchers agree that age is an important factor in a child's ability to attend. In reference to the current literature, Hale and Flaugher (1977, p. 212) state, "Developmental improvement in children's learning ability is believed due in part to an increase in ability to ignore distracting stimulation and attend to critical stimulus information."

Stevenson (1972) thinks that incidental features of the environment may be as salient as those that have some importance to their lives. He says,

> The ability to attend selectively, to categorize the environment as to what is critical and what is not, develops rather late; evidence indicates that not until the child is ten or twelve years old is he able to do this spontaneously (p. 8).

Similar conclusions were drawn by Zukier and Hagan (1978) based on their study designed to investigate the effects of distractors on the recall of central and incidental information. Developmental changes in the flexibility of attention deployment and in the selection of task-appropriate strategies were examined. Sixty children at each of two age levels (8 and 11 years of age) performed a serial position recall

task either in a control condition or under visual or auditory distraction. They report that

> . . . older children make greater use than do younger children of strategies that enable them to (a) focus on the relevant features of the task at the expense of extraneous information and (b) deploy their selective attention with greater efficiency and flexibility (p. 870).

They also state that by age 11 years, children are better able to adjust their encoding strategies to changes in the task than are younger children.

Gale and Lynn (1972) studied the development of attention in 612 children ranging in age from 7 to 13. A continuous response, 40-minute auditory vigilance task was administered to the subjects. Subjects were instructed to listen to a tape recording which consisted of a continuous series of random letters presented at the absolute rate of two every three seconds. A single digit in place of a letter was presented at a rate of one per minute, randomly placed within each minute. Subjects were instructed to listen for the digit and respond by writing the digit in a square. Subjects responded to letters by placing a "tic" in the square. Thus a response was made to each signal. Results of the study show an improvement in performance with age; the greatest improvement occurring between the ages of eight and nine.

Humphrey (1979) contributes evidence that freedom from distractibility is developmental in nature. Her study involved kindergarten, second, and fourth grade children. She classified distraction into three categories: (1) External Source distraction, that information not necessary for task performance and not part of the task context or materials; (2) Complex-Internal Source distraction, extra information which is also part of the task context materials but which can be

discriminated from target or central information by one stimulus feature or dimension; and (3) Complex-Internal Source distraction, extra information which is also part of the task but which requires the simultaneous use of two or more features or dimensions to be discriminated from target information. Results of her study found that kindergarten children had no trouble with External Source distraction, but did have difficulty with Simple-Internal Source and Complex-Internal Source distraction. Second grade subjects experienced slight to no difficulty with External Source and Simple-Internal Source distraction. Fourth grade children had no trouble with any of the conditions. Humphrey suggests that these findings lend support to the idea of an "age appropriate distractibility."

Smith (1979) also concludes that by the fourth grade, and certainly by sixth grade, the child outgrows problems with distractibility. In a study which involved 180 subjects Smith sought to determine if the three Kaufman factors (verbal comprehension, perceptual organization, and freedom from distractibility) could statistically distinguish between two types of readers; able and disabled, at three levels of development: grade two, grade four, and grade six. All subjects, 30 disabled readers and 30 able readers at each of the three grade levels, were administered the Wechsler Intelligence Scale for Children-Revised. A single factor score for Verbal Comprehension, Perceptual Organization and Freedom from Distractibility was obtained for each subject, and The Gates-MacGinitie Reading Test was used to determine the reading level of all pupils. Using a discriminant function analysis to determine whether or not group membership could be predicted on the basis of the three Kaufman factors, Smith concluded that the information processed by the Freedom from

Distractibility factor is most important in distinguishing between able and disabled readers at grade two. Smith points out that while children tend to outgrow their distractibility, the cumulative effects of academic failure make early recognition of this deficit crucial to later development in reading.

Distractibility and Academic Achievement

In 1971 Samuels wrote that no one had, at that time, investigated individual differences in attention and distractibility as related to reading achievement. He suggested that if a relationship could be established, children having difficulty with attention might be identified and taught with "precision teaching techniques" to determine the effect on reading achievement. In 1974 Samuels and Turnure conducted such a study. They determined that a definite positive relationship does exist between attentiveness and reading achievement at the first grade level. They cited previous studies which had shown that attention and school achievement were related at grades 4 and 6, and they wanted to find out if failure to achieve produced the inattention or if inattention caused the failure to succeed. They replicated a study done earlier by Lahaderne (1968) using first grade children before failure had a chance to begin. The Samuels and Turnure study involved 88 first graders. Subjects were observed during the reading hour, and given a positive score if they demonstrated task-relevant behaviors such as looking at the text or teacher, watching an overhead projection or chalkboard presentation, reading or working on follow-up activities or, in general, following the directions of the teacher. A negative score was given to those children who demonstrated nontask-orienting behavior

such as closing eyes, working or playing with nonassigned materials, or failure to follow teacher instructions. A correlation between attention scores and word recognition scores (as measured by selected words from the Dolch list of basic sight words) was found to be significant.

Many studies of attention use a vigilance task as a measure of attentiveness. Vigilance, as defined by Frankmann and Adams (1962, p. 257) is "the attentiveness of the subject and his capacity for detecting changes in stimulus events over relatively long periods of sustained observations." Failure to maintain attention on a vigilance task suggests an element of distractibility. Kirchner and Knopf (1974) offer this rationale for using the vigilance task in attention research.

> It is possible that the vigilance paradigm provides a useful analogue to the classroom situation. In both instances the observer must sit for long periods of time in one sedentary and fairly constricted position in order to identify the critical signals emitted from either the teacher or the experimental device (p. 490).

Kirchner and Knopf (1974) noted that at the time they did their study there had been no previous attempt to relate vigilance to academic achievement, and only four vigilance studies using children as subjects could be found. While these studies did not deal directly with vigilance and academic achievement, they did provide some evidence of a relationship.

Subjects for the Kirchner and Knopf study were 64 second grade children who had scored either in the upper or lower third of the Stanford Achievement Test. The vigilance task involved a 30-minute color movie which showed a stationary jet fighter plane against a blue background. A red, white, and blue star was located on the fuselage, and at predetermined intervals the star changed to all red for half a

second at which time the subject was to push a button. The researchers concluded that there is a relationship between performance on a vigilance task and high and low achievement as defined in the study.

Kupietz and Richardson (1978) also point out the need to relate vigilance performance to a child's ability to remain attentive in a classroom setting. They cite Kirchner and Knopf as being the only other known study investigating the relationship between vigilance and achievement in children. Kupietz and Richardson included in their study with children ages 7½-12½, two types of vigilance tasks (visual and auditory), teacher ratings of behavior and a reading achievement test score.

The auditory vigilance task involved 12 letters randomly arranged to form a 100-letter series, with the restriction that the two-letter sequence a, x was scheduled to appear 15 times on a random basis. The letters were recorded on tape and played to the child through headphones at a rate of approximately one letter per second. Whenever the child heard the letter x which had followed letter a, a hand-held switch was to be depressed.

The visual vigilance task consisted of the same 12 letters randomly arranged into an 80-letter series with the restriction that the a, x sequence was scheduled to occur 12 times on a random basis. All letters were upper case and were presented singly on slides. Again the child was instructed to depress the hand-held switch whenever the letter x followed the letter a.

The results of this study support the findings of Kirchner and Knopf in that children who made relatively few vigilance errors also tended to score better on reading achievement tests. Kupietz and

Richardson also found that subjects made fewer errors on the visual task than on the auditory task. They point out that while age is clearly a factor in a child's ability to monitor stimuli, it is a less important variable in visual than in auditory performance.

Denney (1974) investigated the relationship between three cognitive style dimensions and elementary reading abilities. Good and poor readers from grades two through five were compared on three cognitive style dimensions--conceptual style preferences, cognitive tempos, and attentional styles--which were assessed with the Conceptual Styles Test, Matching Familiar Figures Test, and Fruit Distraction Test.

The Fruit Distraction Test which Denney used to assess attentional style consisted of three cards each of which consisted of 50 pictures of bananas, cherries, grapes, and carrots randomly ordered on the card in 10 rows of five. Card one consisted of pictures of fruits and vegetables colored appropriately (yellow, red, purple, orange, respectively). Card two was identical to card one with the addition of a number of achromatic drawings of common objects interspersed among relevant stimuli. Card three was identical to card one except the fruits and vegetables were colored inappropriately. Each child was required to name the colors of the fruits and vegetables on cards one and two and for card three they were to name the color each fruit and vegetable should have been. "Reading" times and numbers of correct and incorrect responses were recorded for each card. Following the reading of card two subjects were asked to recall as many achromatic drawings as they could. Differences in reading time and errors between cards two and one, and cards three and one, and number of achromatic drawings recalled on card two constituted five indices of attentional style.

Eighty subjects participated in the study. Substantial differences between good and poor readers were found along the attentional style dimensions. Cognitive tempo failed to distinguish between good and poor readers and Conceptual style did not distinguish between good and poor readers until the fifth grade. Denney concluded that the study pointed up the necessity of assessing attention deployment in the face of distracting information.

In one of the few studies relating distractibility to the reading process, Shaw (1979) investigated the relationship of distractibility to the linguistic cue systems a remedial reader uses to reconstruct meaning from print. The study included 28 (13 primary; 15 intermediate) remedial readers who were enrolled in a summer reading program. Distractibility was determined by scores on the Fruit Distraction Test. Students read orally from extended passages and oral reading miscues were coded and examined for their degree of graphic similarity, sound similarity, syntactic acceptability, and semantic acceptability. Results of the study were that there is no significant difference between distractible and non-distractible remedial readers' use of cue systems with the exception of graphic similarity. Primary remedial readers who are distractible make more oral reading errors of the graphic similarity category than do their primary non-distractible remedial reader counterparts.

Learning Preference

Children process information differently, and learn to read through a variety of ways. Children apparently have a preference for using one mode of learning over another. An individual's modality strength is the

sensory channel through which information is processed most efficiently, and according to Barbe and Milone (1980, p. 45) "Neither 'nature' nor 'nurture' fully accounts for the development of a modality strength. Most likely, a person's heredity, maturation, learning, and cultural upbringing are all contributing factors." Young (1975) and Treadway (1975) hold a similar view. They state that the differentiated modality distinction appears to be related more closely to the innate capacity of a child than to any determinable environmental factor.

The theory that children do demonstrate modality strengths has been generally accepted (see Appendix A). Numerous studies have been conducted which have dealt with the perceptual modality-instructional method interaction. However, when instruction has been matched with modality strength, results have not been encouraging (see Appendix B). Tarver and Dawson (1978) reviewed the literature on modality preference and reported that 13 of the 15 studies reviewed reported no interaction. The possibility exists that research has been inadequately designed using insensitive measures of modality and questionable methods of instruction. The few studies which did report significant results had one thing in common; the methodology preference was determined by trial lessons (Walker, 1980) (see Appendix C). This review is restricted to only those studies which used trial lessons.

In an earlier study by Mills (1956) it was determined that different children learned more efficiently by different methods and no one method was best for all children. Mills used a Learning Methods Test which he developed for the purpose of determining the method or combination of methods which would be most effective for teaching word recognition to various types of individuals. Fifty-eight subjects were

selected for the study. Thirty-nine boys and 19 girls in grades two to four were divided into nine classifications based on age and intelligence levels. Four methods, visual, phonic, kinesthetic and a combination of all three were used to teach 40 words; 10 by each method. It was determined that the kinesthetic method was most effective for children of low intelligence and the phonic method was least effective for this group. Children of average intelligence learned equally well with the visual and combination methods and learned least effectively with the kinesthetic method. Learning method did not appear to be a factor in the ability to learn new words for children of high intelligence. When age was taken into consideration the visual method was found to be best for the eight year olds and no preference for method was shown by the nine year old group. Mills concluded that learning preference is a significant variable in individualizing instruction.

Using Mills' Learning Methods Test, Coleman (1962) identified the learning preference of 51 disabled readers. For each subject a learning preference of either visual, auditory, kinesthetic, or a combination of methods was most efficient in a total group and sub-group. Results of the study were that no particular method was significantly superior for all subjects or for subgroups with respect to age, I.Q., or degree of under-achievement. However, he did find that under-achievers, as a group, learned as efficiently by one method as by another whereas severe under-achievers learned best by the visual and combination methods, and mild under-achievers learned best by the visual method. The average and high I.Q. students learned best by the visual and combination methods and the low I.Q. students showed a preference for the kinesthetic method. This finding is consistent with Mills' results. Also in keeping

with the results of the Mills' study, Coleman determined that the least effective method for the average and high I.Q. group was the kinesthetic method, and the least effective method for the low I.Q. group was the phonic method. Age did not appear to be a significant factor with relation to learning method.

While no particular method was significantly superior for all subjects, it was determined that different students learned more efficiently by different methods leading Coleman to the same conclusion as Mills; determining a student's learning preference is of value in developing both developmental and remedial instructional programs.

Manwarren (1972) designed a study which determined if children who were below average in readiness would experience greater success when taught by their preferred method. Population for the study consisted of 163 students who scored below the 30th percentile on the Metropolitan Readiness Tests. Fifty-one students were assigned to the control group and were taught by one method. The remaining 112 students were taught by their preferred method. A learning preference for each subject was determined by the Ray Reading Methods Test. Instruction was carried on throughout the school year. At the end of the year Manwarren found significant differences in achievement between the Visual-Auditory group taught by a preferred method and the Visual-Auditory group taught by some method other than the preferred method. The difference was in favor of the Visual-Auditory group taught by the preferred method. Significant differences were also found between the Language Experience group taught by the preferred method and the Language Experience group taught by the method other than the preferred method. The difference was in favor of the Language Experience group taught by the preferred

method. The sample size for the Linguistic group and the Auditory-Visual group was too small for analysis. Manwarren's study lends support to the hypothesis that when instruction is matched with a preferred method of learning success in learning to read is increased.

Young (1975) and Treadway (1975) investigated the learning preference of children at the pre-reading level. In companion studies Young and Treadway identified significant predictors of word recognition success using four methods of teaching beginning reading. Sixty-six subjects participated in the two studies. The learning preference of each of the sixty-six students was determined by the Ray Reading Methods Test. A series of pre-reading readiness tests was also given to the subjects. Using a multiple correlation technique, Young and Treadway were able to determine the relationship between performance on pre-reading readiness tests and success with specific methods of reading.

Both of the studies indicate that the predictor variables listed as most predictive of success with the Auditory-Visual method of reading are not exclusively auditory or visual tasks. Nor were the predictor variables listed as most predictive of success with the Visual-Auditory method exclusively visual or auditory tasks. Similar findings were reported for the Linguistic and Language Experience methods. Both Young and Treadway suggest that the learning preference of kindergarten children can be identified which can provide valuable information for reading instruction for these individuals.

Summary

The literature reviewed dealt with the relationship between distractibility and academic achievement, the developmental nature of

distractibility, and studies concerning learning preference. The indications are that children who have problems maintaining attention and concentration do have difficulty with learning to read. Distractibility appears to distinguish between able and disabled readers at the second grade level, and there is some evidence that distractibility is developmental in nature with children becoming less distractible as they get older. However, the cumulative effects of distractibility often render the child reading disabled by the time the distractibility is outgrown.

Modality studies tend to support the theory that children do have modality preferences but the research fails to show that children taught by their modality preference do better than those taught by other modalities. Other research points to the fact that children tend to exhibit a preference for particular methods of teaching reading and when taught by these preferred methods, they learn more effectively. Thus, instruction matched to modality preference fails to produce significant results while instruction matched to learning preference does produce significant results. This indicates that it is more important to identify the child's learning preference than it is to identify the modality preference.

The possibility exists that certain methods of teaching reading may be more appropriate for distractible children while other methods of teaching reading may require a greater degree of attentiveness in order to succeed. Therefore, it is important that the learning preference of distractible children be identified. Methods of teaching reading which require a greater degree of freedom from distractibility should then be avoided when placing children in reading programs.

CHAPTER III

METHOD AND PROCEDURE

Sample and Population

The population for this study is kindergarten students enrolled during the 1979-1980 academic year in the public schools of two North Central Oklahoma communities. There is a cross section of socio-economic levels represented, and the sample's ethnic backgrounds include Black, American Indian, and Caucasian racial groups. The people living in the communities can be described as relatively mobile.

In order to be included as a subject for the sample population for this study, the following criteria had to be met:

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

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

3. Categorized as functioning not below a normal range of intelligence. The Slosson Intelligence Test for Children and Adults was used as a screening instrument. Only those scoring 85 and above were included.

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

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

6. Parental permission granted to administer the instruments listed below.

A description of the sample appears in Table I.

TABLE I

DESCRIPTION OF SAMPLE GROUP

Subjects	Female	Male	Age Range	Median Age	IQ Range	Mean IQ
N = 120	N = 64	N = 56	5-3 - 6-5	5.8	85-147	112

Testing Procedure

The following tests were administered by two examiners who were thoroughly familiar with the tests and experienced in the administration of them. The tests were administered to the sample population during February, March, and April, 1980.

1. McCarthy Scale of Children's Abilities (MSCA), Dorothea McCarthy, 1972.

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

The McCarthy Scale of Children's Abilities was individually administered. Subjects were taken to a room relatively free from distraction. Instructions in the manual were followed.

For the Ray Reading Methods Test, the instructions and procedures provided in the manual were followed with the following exceptions. Large flash cards were used instead of the small three by five cards to enable a small group of children to read them at a distance of three feet. Also, a recall/reteaching period was scheduled at the end of 30 minutes rather than the 20 and 60 minute sessions prescribed in the manual. This change in procedure was made due to a limited time frame. This deviation from the manual was made with the approval of the author of the test.

The instructional sessions for the Ray Reading Methods Test were conducted by this writer and another student, both of whom are reading specialists and are thoroughly familiar with the Ray Reading Methods Test. The recall/reteaching sessions were conducted by volunteer examiners who were unfamiliar with the Ray Reading Methods Test, thus creating the necessity for providing instruction and training for these examiners. A training session was scheduled prior to the time the testing began. The emphasis of this training session was the techniques and procedures involved in administering the Ray Reading Methods Test.

Subjects were randomly assigned to groups with four to six per group. Children were taken to a small, quiet room for the teaching periods. The recall/reteaching sessions were done individually with the other children away from the child being checked.

Instrumentation

McCarthy Scale of Children's Abilities, 1972 Edition

The McCarthy Scale of Children's Abilities is an individually administered test designed to provide both a diagnostic profile of abilities and a summary score comparable to the deviation I.Q. The test contains 18 subtests which are divided into six ability scales.

The standardization sample included 1,032 children, with at least 100 in each half-year age grouping from 2½ to 8½ years. The sample was selected nationwide to reflect the United States population for race, geographic region, and father's occupation.

Test-retest reliability coefficients range from .79 to .93 with stability coefficients, which were determined by obtaining test-retest data for a one-month interval for 125 children, range from .69 to .90. Correlation coefficients calculated between the General Cognitive Index of the McCarthy Scale of Children's Abilities and the Stanford-Binet I.Q. is .81 and the Wechsler Preschool and Primary Scale of Intelligence full-scale I.Q. is .71.

Four subtests were selected on the basis of Kaufman's (1980) recommendations and administered for this study. The following is a summary of each subtest.

Pictorial Memory: The child is shown a card which has six colored pictures of familiar objects. The examiner names the objects aloud during a 10-second exposure, after which the card is removed and the child tries to recall the objects. This is an easy test of immediate memory for material

presented both visually and orally, and it is related to the development of vocabulary, particularly in the younger child.

Number Questions: The child answers a graded series of 12 questions on number information or quantitative thinking. The first few items are easy; subsequent items require simple addition, subtraction, multiplication, or division. Children are given an opportunity to demonstrate their talents in the field of mathematics without too much stress being placed on formal academic achievement. The problems bear relevance to a child's life experiences.

Tapping Sequence: The child imitates eight sequences of notes tapped by the examiner on a four-key xylophone. The small xylophone is appealing to most children, and provides auditory and visual stimulation simultaneously. In addition to assessing immediate memory for nonverbal material, this test permits observation of the child's attention and perceptual-motor coordination.

Imitative Action: The four simple motor tasks of Imitative Action afford the examiner a few more observations of the child's motor skills, and an opportunity to note his eye preference in sighting through a tube.

Ray Reading Methods Test (Experimental Edition)

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

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

Test 2, Auditory-Visual - a ten item test based on the phoneme-grapheme unit of instruction with specific blending instruction. The consonant sounds of "m", "t", "b", and the short vowel sounds of "a" and "e" will be taught in the first instructional period. After mastery, the sounds will be synthesized into the words - mat, bat, mob, tot, tam - with no emphasis on meaning. During the second instructional period, the silent e will be introduced and the rule explained using the long sounds of "a" and "o" in the following words: mate, bate, mobe, tote, and tame.

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

Test 4, Language Experience - a ten item test based on the sentence unit of instruction utilizing the language of the subjects. A toy 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.

The reliability of the Ray Reading Methods Test was determined by calculating odd-even split half correlation coefficients. The reliabilities reported for the Ray Reading Methods Test subtests are: .88 for Visual-Auditory, .98 for Auditory-Visual, .95 for Linguistic Word Structure and for Language Experience, .68 (Manwarren, 1972).

Slosson Intelligence Test for Children and Adults (SIT)

The Slosson Intelligence Test for Children and Adults is an individually administered test designed primarily for the purpose of screening. The items for this short screening test are similar in nature to the Stanford-Binet tasks.

A reliability coefficient of .97 was obtained on 139 individuals from ages 4 to 50 years using a test-retest interval within a period of two months.

Concurrent validity of the Slosson Intelligence Test for Children and Adults is indicated by the high correlations with the Stanford-Binet. Correlation coefficients ranging from .90 to .98 are reported in the manual.

The population used in obtaining comparative results came from both urban and rural populations in New York State. American Indian, Black,

and White subjects were included representing a cross-section of socio-economic backgrounds.

Statistical Analysis

The statistical analysis was performed using facilities at the Oklahoma State University Computer Center. Several different treatments of the data yielded the information for the study. Using the means and standard deviation for each subtest given in the MSCA manual, raw scores on each subtest were converted to z scores. In order to test the first four hypotheses, a mean z score was obtained for the total MSCA score. In order to test the second four hypotheses, individual subtest z scores were utilized. Raw scores on the Ray Reading Methods Test were also converted to z scores using the means and standard deviations from the Young (1975) and Treadway (1975) studies.

To investigate whether a significant relationship exists between distractibility and four methods of reading instruction, Pearson product-moment correlations were computed between MSCA Subtest (total) scores and word recognition scores on each of four methods of teaching reading. The Pearson correlation coefficient r is used to measure the strength of relationship. The strength of the relationship indicates both the goodness of fit of a linear regression line to the data, and when r is squared, the proportion of variance in one variable explained by the other.

In order to determine the predictive strength of the four MSCA Subtests, a stepwise multiple correlation was used. This technique allowed the identification of the optimum combinations of predictor variables and their unique contribution to the multiple correlation.

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 multiple correlation.

The stepwise procedure starts with the simple correlation matrix and enters into regression the variables most highly correlated with the criterion variables. 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 adds significantly 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 the contribution is not significant, the predictor variable is not entered in the multiple correlation.

The Pearson correlation and the stepwise multiple correlation techniques were utilized using the computer program Statistical Package for the Social Sciences (SPSS), (Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975).

CHAPTER IV

ANALYSIS OF THE DATA

The major purpose of this study is to determine if there is a relationship between distractibility and kindergarteners' word recognition scores on four methods of teaching beginning reading. Analysis of the data was based on the degree of relationship obtained between the score a child received on the predictor variable and individual scores that a child received on each of the four reading methods.

Results Related to Hypothesis I

Hypothesis I: There is no significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and word recognition scores for children taught using the Auditory-Visual method of teaching reading.

The correlation between the average of the standard scores on McCarthy Scale of Children's Abilities subtests and the criterion variable is .17 as reported in Table II.

Hypothesis I is not rejected. There is no significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and success using the Auditory-Visual method of teaching reading. The average of

the standard scores can be used to account for 3% of the variance (.02887 decimal value) in the Auditory-Visual method scores.

TABLE II

CORRELATIONS BETWEEN MSCA AVERAGE OF THE STANDARD SCORE AND SCORES ON THE RRMT SUBTEST

RRMT Subtest	r	r^2	F
Auditory-Visual	.16990	.02887	3.51
Visual-Auditory	.42029	.17664	25.315*
Linguistic Word Structure	.45687	.20873	31.127*
Language Experience	.29059	.08444	10.882*

* $p < .01$

Results Related to Hypothesis II

Hypothesis II: There is no significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and word recognition scores for children taught using the Visual-Auditory method of teaching reading.

The correlation between the average of the standard score on McCarthy Scale of Children's Abilities subtests and the criterion variable is .42.

Hypothesis II is rejected. There is a significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and success using the Visual-Auditory method of teaching reading. The r^2 value indicates that 18% of the variance (.17664 decimal value) in the Visual-Auditory method scores can be accounted for by variance in the average of the standard scores on the McCarthy Scale of Children's Abilities.

Results Related to Hypothesis III

Hypothesis III: There is no significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and word recognition scores for children taught using the Linguistic Word Structure Method of teaching reading.

The correlation between the average of the standard score on the McCarthy Scale of Children's Abilities subtests and the criterion variable is .46.

Hypothesis III is rejected. There is a significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and success using the Linguistic Word Structure Method of teaching reading. The r^2 value indicates that 21% of the variance (.20873 decimal value) in the Linguistic Word Structure method scores can be accounted for by variance in the average of

the standard scores on the McCarthy Scale of Children's Abilities subtests.

Results Related to Hypothesis IV

Hypothesis IV: There is no significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and word recognition scores for children taught using the Language Experience method of teaching reading.

The correlation between the average of the standard scores on the McCarthy Scale of Children's Abilities subtests and the criterion variable is .29.

Hypothesis IV is rejected. There is a significant relationship between the average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities and success using the Language Experience Method of teaching reading. The r^2 value indicates that 8% of the variance (.08444 decimal value) in the Language Experience Method scores can be accounted for by variance in the average of the standard scores on the McCarthy Scale of Children's Abilities subtests.

Results Related to Hypothesis V

Hypothesis V: A linear least squares combination of scores on selected subtests from the McCarthy Scale of Children's Abilities is not predictive of word recognition scores for children taught using the Auditory-Visual Method of teaching reading.

The predictor variables which contributed significantly to the multiple correlation are presented in Table III. In the stepwise multiple regression using four predictor variables, three contribute significantly to the multiple correlation. Tapping Sequence is not a significant predictor and was not added to the equation.

The predictor variables were added to the equation beginning with the variable that accounts for the greatest amount of unique variance in the criterion variable. The last predictor added contributes least to the multiple correlation coefficient.

TABLE III

SUMMARY OF SIGNIFICANT PREDICTORS
FOR THE AUDITORY-VISUAL METHOD

Significant Predictor			F
Number Questions	.23328	.05542	6.79*
Imitative Action	.27305	.07456	4.713**
Pictorial Memory	.27650	.07645	3.201*

* $p < .05$
** $p < .01$

Hypothesis V is rejected for all predictive variables except Tapping Sequence. In a linear least squares combination three of the four subtests are predictive of scores on the Auditory-Visual method. The multiple R for the combination of subtests Number Questions, Imitative Action, and Pictorial Memory indicates that 8% of the variance (.07645 decimal value) in the criterion variable Auditory-Visual can be accounted for by the variance in the scores on the Number Questions, Imitative Action, and Pictorial Memory subtests.

Results Related to Hypothesis VI

Hypothesis VI: A linear least squares combination of scores on selected subtests from the McCarthy Scale of Children's Abilities is not predictive of word recognition scores for children taught using the Visual-Auditory Method of teaching reading.

The predictor variables which contribute significantly to the multiple correlation are presented in Table IV. In the stepwise multiple regression using four predictor variables, all four contributed significantly.

Hypothesis VI is rejected. In a linear least squares combination all four subtests are predictive of scores on the Visual-Auditory Method. The multiple R^2 value indicates that 18% of the variance (.18499 decimal value) in the criterion variable Visual-Auditory can be accounted for by the variance in the scores on the Number Questions, Tapping Sequence, Imitative Action, and Pictorial Memory subtests.

Results Related to Hypothesis VII

Hypothesis VII: A linear least squares combination of scores on selected subtests from the McCarthy Scale of Children's Abilities is not predictive of word recognition scores for children taught using the Linguistic Word Structure Method of teaching reading.

TABLE IV

SUMMARY OF SIGNIFICANT PREDICTORS FOR THE VISUAL-AUDITORY METHOD

Significant Predictor	R	R^2	F
Number Questions	.38344	.14703	20.339**
Tapping Sequence	.42325	.17914	12.767**
Imitative Action	.42693	.18227	8.619**
Pictorial Memory	.43010	.18499	6.525**

** $p < .01$

The predictor variables which contribute significantly to the multiple correlation are presented in Table V. In the stepwise multiple regression using four predictor variables, all four contributed significantly.

Hypothesis VII is rejected. In a linear least squares combination all four subtests contribute significantly to the prediction of scores on the Linguistic Word Structure Method. The multiple R^2 value indicates that 28% of the variance (.27585 decimal value) in the criterion variable Linguistic Word Structure can be accounted for by the variance in the scores on the Number Questions, Pictorial Memory, Imitative Action, and Tapping Sequence subtests.

TABLE V

SUMMARY OF SIGNIFICANT PREDICTORS FOR THE LINGUISTIC WORD STRUCTURE METHOD

Significant Predictor	R	R^2	F
Number Questions	.49861	.24861	39.043**
Pictorial Memory	.51664	.26692	21.300**
Imitative Action	.52278	.27330	14.542**
Tapping Sequence	.52521	.27585	10.951**

** $p < .01$

Results Related to Hypothesis VIII

Hypothesis VIII: A linear least squares combination of scores on selected subtests from the McCarthy Scale of

Children's Abilities is not predictive of word recognition scores for children taught using the Language Experience Method of teaching reading.

The predictor variables which contribute significantly to the multiple correlation are presented in Table VI. In the stepwise multiple regression using four predictor variables, all four contribute significantly.

TABLE VI

SUMMARY OF SIGNIFICANT PREDICTORS FOR THE LANGUAGE EXPERIENCE METHOD

Significant Predictor	R	R^2	F
Number Questions	.27706	.07676	9.811**
Tapping Sequence	.32213	.10377	6.773*
Imitative Action	.34002	.11561	5.055*
Pictorial Memory	.35008	.12255	5.055*

* $p < .05$
** $p < .01$

Hypothesis VIII is rejected. In a linear least squares combination all four subtests contribute significantly to the prediction of

scores on the Language Experience Method. The multiple R^2 value indicates that 12% of the variance (.12255 decimal value) in the criterion Language Experience can be accounted for by the variance in the scores on the Number Questions, Tapping Sequence, Imitative Action, and Pictorial Memory subtests.

Summary

The results of the Pearson product-moment correlation and the stepwise multiple regression analyses were presented in this chapter. The hypotheses were tested using these statistical procedures.

An average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities is not significantly related to word recognition scores for children taught using the Auditory-Visual Method of teaching reading. However, in a linear least squares combination three of the subtests from the McCarthy Scale of Children's Abilities contribute significantly to the prediction of scores on the Auditory-Visual Method.

An average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities is significantly related to word recognition scores for children taught using the Visual-Auditory Method of teaching reading. In a linear least squares combination four of the subtests from the McCarthy Scale of Children's Abilities contribute significantly to the prediction of scores on the Visual-Auditory Method.

An average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities is significantly related to word recognition scores for children taught using the Linguistic Word

Structure Method of teaching reading. In a linear least squares combination all four subtests from the McCarthy Scale of Children's Abilities contribute significantly to the prediction of scores on the Linguistic Word Structure Method.

An average of the standard scores on selected subtests of the McCarthy Scale of Children's Abilities is significantly related to word recognition scores for children taught using the Language Experience Method of teaching reading. In a linear least squares combination all four subtests from the McCarthy Scale of Children's Abilities contribute significantly to the prediction of scores on the Language Experience Method.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This research investigated the possibility that distractibility is predictive of success with specific methods of beginning reading instruction. The relationships between distractibility and word recognition scores on four methods of reading instruction was investigated.

One hundred twenty subjects were included in the sample. These students were screened with the Slosson Intelligence Test and only those whose I.Q. was 85 and above were included in the study. All subjects were administered four subtests from the McCarthy Scale of Children's Abilities. These four subtests, which were recommended by Kaufman as the best indicators of distractibility for kindergarten children, were: Pictorial Memory, Tapping Sequence, Number Questions, and Imitative Action. The scores for each subject on each of the subtests were converted to a z score. The z scores for each subtest were totaled and a mean z score was obtained for the four subtests for each individual. The average of the standard score indicates: the higher the z score the greater amount of freedom from distractibility; the lower the z score the greater the degree of distractibility.

Each of the subjects were taught 40 words by four different methods of instruction (10 words each method). The methods used were:

Auditory-Visual, Visual-Auditory, Linguistic Word Structure, and Language Experience. The child's ability to recall the words taught was assessed by a delayed recall test administered at the end of 24 hours following the instructional period for each method.

A Pearson product-moment correlation was used to determine if a relationship existed between the way a child performed on the four selected subtests of the McCarthy Scale of Children's Abilities and performance on each of the four delayed recall methods tests. A stepwise multiple regression procedure was used to determine the predictive ability of each of the four McCarthy Scale of Children's Abilities subtests when considered in linear combination.

Conclusions

The following conclusions may be drawn from the results of the statistical treatment of the data:

1. No significant relationship between distractibility and success using the Auditory-Visual Method of teaching reading was established when distractibility is measured by the average standard scores of the four selected McCarthy Scale of Children's Abilities subtests.

Correlations between standard scores on the four subtests of the Ray Reading Methods Test and average standard scores on each of the four McCarthy Scale of Children's Abilities subtests are presented in Table VII. Number Questions is the only subtest which correlates significantly with the Auditory-Visual Method. When considered in linear combination, Number Questions is joined by Imitative Action and Pictorial Memory as significant predictors of success with the Auditory-Visual Method. However, only 8% of the variance (.07645 decimal value) in the

Auditory-Visual scores can be accounted for by these three subtests. Apparently distractibility is related to the success or failure of students with this method.

TABLE VII

CORRELATION BETWEEN MSCA SUBTEST AND RRMT SUBTEST

MSCA Subtests	Auditory-Visual	Visual-Auditory	Linguistic Word Structure	Language Experience
Pictorial Memory	-.02282	.09033	.20518*	.10145
Tapping Sequence	.03908	.2580**	.14256	.22043*
Number Questions	.23328*	.38344**	.49861**	.27706**
Imitative Action	.17960	.10579	.15078	.14082

* $p < .05$
** $p < .01$

2. A significant positive relationship between distractibility and success using the Visual-Auditory Method and distractibility and success using the Linguistic Word Structure Method was established. This indicates that a child must be relatively free from distractibility in order to be successful with these methods. Both methods have these learner strengths requirements: Vision (acuity, identification, discrimination, perception, memory) and visual-auditory integration

(Ray, 1971). Additionally, with both these methods the words were taught as whole words which requires the learner to visually attend to words presented.

3. A significant positive relationship was also established between distractibility and success using the Language Experience Method, suggesting that success with this method also requires a certain amount of freedom from distractibility. The Language Experience Method also involves an element of visual attention although not to the same extent as the Auditory-Visual and Linguistic Word Structure Methods. According to Ray (1971) the Language Experience Method utilizes the oral communication patterns of the learner which are recorded as stories to be visually recognized.

With regard to these three conclusions, the possibility exists that distractibility as measured by the four selected subtests of the McCarthy Scale of Children's Abilities is more visually related. This gives rise to the question of whether a dichotomy exists within the distractibility factor and if so are children who are visually distractible more susceptible to reading problems.

Failure to establish a significant negative relationship indicates that no preferred method was established for children who are distractible. On the basis of this research, caution should be exercised in making judgements with regard to placement of distractible children in specific methods of reading instruction. More research is needed in order to investigate the following possibilities:

1. the McCarthy Scale of Children's Abilities is an insensitive measure of distracitibility,

2. the subtests selected to be used as a measure of distractibility may be an inappropriate combination,

3. the four McCarthy Scale of Children's Abilities subtests used in this study may be a measure of visual distractibility,

4. a different statistical treatment of the data may yield different results.

Recommendations

Based on the findings of this research the following recommendations are offered:

1. A follow-up study should be conducted with a sample similar to the one used in this study and a different measure of distractibility in order to further establish the McCarthy Scale of Children's Abilities as a measure of distractibility.

2. Further research be conducted in the area of learning preference of the distractible child.

3. Replication of this study be conducted using a different treatment of the data.

4. More research needs to be conducted in the area of distractibility in order to determine if there is a difference between the visually distractible and the auditorally distractible with regard to reading success.

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APPENDICES

APPENDIX A

SUMMARY OF MODALITY PREFERENCE RESEARCH

(WALKER, 1980)

Study	Modality Preference	Teaching Methods Used	Significant Results
deHirsh, Jansky, and Langford (1966)	A,V,K	Basal program with and without supplemental phonics.	No
Harris (1965)	A,K	Language Experience with reinforcement in preference.	No
Robinson (1968)	A,V	A = Hay-Wingo Phonics V = Basal reader	No
Bateman (1968)	A,V	A = Sound-Symbol Approach V = Basal reader	No
Bruininks (1968)	A,V	Modified Mills Learning Methods Test	No
Freer (1971)	A,V	A = Auditory method V = Basal reader	No
McCarthy (1971)	A,V	Ray Reading Methods Test	No
Ringler, Smith, and Cullinan (1971)	A,V,K	Bank Street Reader with small group instruction in preferred method.	No
Waugh (1973)	A,V,K	A = Auditory Method V = Visual Method	No
Bohning (1973)	A,V	A = Auditory feedback V = Visual feedback	No
Miller (1974)	A,V	A = Palo Alto Reading Program V = Bank Street Readers	No
Scott (1973)	A,V,K	American Basic Reading Program with twenty minutes of instruction in preferred method.	No

A = Auditory Preference
V = Visual Preference
K = Kinesthetic Preference

APPENDIX B

SUMMARY OF MODALITY PREFERENCE/ INSTRUCTIONAL METHOD RESEARCH (WALKER, 1980)

Study	Population	Measures	Modality Preference	Modality Preference Displayed
deHirsh, Jansky, and Langford (1966)	Kindergarten	GRRT, ITP, WADT, BVMGT	A,V	Yes
Harris (1965)	Grade 1	BVMGT, GRRT	A,K	Yes
Robinson (1968)	Grade 1	GPQ, WADT	A,V	Yes
Bateman (1968)	Grade 1	ITP	A,V	Yes
Bruininks (1968)	Grades 2 & 3		A,V	Yes
Freer (1971)	Grade 1	WISC (C&DS) WPPSI (MFS) BVRT, WADT	A,V	Yes
McCarthy (1971)	Kindergarten	ITP	A,V	Yes
Ringler, Smith, and Cullinan (1971)	Grade 1	NYULMT	A,V,K, AVK	Yes
Waugh (1973)	Grade 2	ITP	A,V	Yes
Bohning (1973)	Grade 1	DTLA	A,V	Yes
Miller (1974)	Grade 1	ITP	A,V	Yes
Scott (1973)	Grade 2		A,V	Yes
Bursuk (1971)	Adolescent	STEP	A,V	Yes

GRRT = Gates Reading Readiness Test
ITP = Imitation of Tapped Patterns
WADT = Wepman Auditory Discrimination Test
BVMGT = Bender Visual Motor Gestalt Test
GPQ = Goins Perceptual Quotient
WISC (C&DS) = Wechsler Intelligence Scale for Children (Coding and Digit Span)
WPPSI (MFS) = Wechsler Preschool and Primary Scale of Intelligence (Memory for Sentence)
BVRT = Benton Visual Retention Test
DTLA = Detroit Test of Learning Abilities
NYULMT = New York University Learning Modalities Test
STEP = Sequential Tests of Educational Progress
A = Auditory modality
V = Visual modality
K = Kinesthetic modality

APPENDIX C

SUMMARY OF MODALITY PREFERENCE DEFINED BY TRIAL LESSONS RESEARCH (WALKER, 1980)

Study	Methodology Preference	Criterion Used	Significant Results
Mills (1955)	A,V,K,C	Mills Learning Methods Test	Yes
Coleman (1962)	A,V,K,C	Mills Learning Methods Test	Yes
Manwarren (1972)	A-V,V-A, LWS,LEA	Ray Reading Methods Test and Reading Achievement	Yes
Young (1975)	A-V,V-A, LWS,LEA	Ray Reading Methods Test	Yes
Treadway (1975)	A-V,V-A LWS,LEA	Ray Reading Methods Test	Yes
Vandever and Neville (1974)	A,V,K	A = letter sound V = meaning and distinctive feature K = words were textured and Reading Achievement	No

A = Auditory Method
V = Visual Method
K = Kinesthetic Method
C = Combination Method
A-V = Auditory-Visual Method
V-A = Visual-Auditory Method
LWS = Linguistic Word Structure Method
LEA = Language Experience Method

VITA[2]

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