An Investigation of the Relationship Between Word Recognition Skills and Children with Visual Perception Limitations

Christine McCaffery

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AN INVESTIGATION OF THE RELATIONSHIP BETWEEN WORD RECOGNITION SKILLS AND CHILDREN WITH VISUAL PERCEPTION LIMITATIONS

THESIS

Submitted to the Graduate Committee of the Department of Curriculum and Instruction Faculty of Education State University College at Brockport in Partial Fulfillment of the Requirements for the Degree of Master of Science in Education

by

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Abstract

The purpose of this study was to determine if the visual perception limitations of identified children affected their word recognition skills. Variables included a comparison of children with and without visual perception limitations and response to both abstract and concrete words.

The questions that were explored in this investigation were:

1. Do children with visual perception limitations have more difficulty recognizing abstract words than concrete words?

2. Do children identified as having visual perception limitations have more difficulty recognizing abstract words than children without visual perception limitations?

3. Do children identified as having visual perception limitations have more difficulty recognizing concrete words than children who did not have such visual perception limitations?

The subjects for this study were fifty second grade children from an upstate New York community. An investigator-developed visual perception test identified the subjects with visual perception limitations. The subjects were then divided into two groups of twenty-five children each. A vocabulary list of fifteen concrete and fifteen abstract words were presented to the children in the study. A comparison was made between the two groups of subjects.

Statistical analysis from a t-test for dependent means showed that children with visual perception limitations were able to recognize
concrete words more successfully than abstract words. Using a $t$ test for independent means, no significant difference was found in the recognition of abstract words between children with visual perception limitations and children without visual perception limitations. Results also showed a significant difference in the recognition of concrete words favoring children without visual perception limitations when compared with children with visual perception limitations when using a $t$ test for independent means to analyze the data.

Differences found in word recognition skills between the children point to the need for differential instruction in reading during the primary grades. It has also been noted that visual perception testing is a necessary and valuable tool for early detection of visual perception limitations of children in the classroom. Conclusions indicate the need for more teacher information about visual perception limitations, diagnostic testing, and also methods for remediation in the classroom.
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Chapter I

Statement of the Problem

Purpose

The primary reason for this study was to determine if the visual perception limitations of identified children affect their word recognition skills. The first research question asked whether children with visual perception limitations have more success recognizing abstract or concrete words. In addition, a comparison was made involving the concrete and abstract word recognition performance of children with visual perception limitations with the performance of children who did not have such limitations.

Questions

1. Do children with visual perception limitations have more difficulty recognizing abstract words than concrete words?

2. Do children identified as having visual perception limitations have more difficulty recognizing abstract words than children without such visual limitations?

3. Do children identified as having visual perception limitations have more difficulty recognizing concrete words than children who do not have such visual perception limitations?
Need for the Study

Living consists of interacting with the environment, and to interact, one must know about the world. This happens through the perceptual process, which is perceiving all the sensations received. Information received through a child's senses is interpreted, analyzed and therefore perceived.

Children with visual perception limitations have difficulties in many areas of life. The beginning of these problems usually arises in the area of reading (Rosner, 1972). According to Frostig (1969), visual perception develops in children between the ages of three to seven years. It is during this period that reading instruction is initiated in most American elementary schools. Ellingson (1967) stated that the child with a perceptual limitation will have difficulty in the area of beginning reading skills especially since perceiving is an important aspect of reading. There are many types of perceptual limitations; however, this study concentrated on the significance of visual perception relating to reading in the primary grades.

D'Annunzio and Steg (1972) noted widespread interest in the role of perception in the reading process. Pikulski (1971) found that the correlations in reading deficiency and perceptual skills are more important to the establishment of word recognition skills than to comprehension skills. The child with a visual perception limitation seems to have an added problem in the acquisition of beginning reading skills. This suggests a need for further research in both visual perception and word recognition skills and their relationship to each
other. This study will investigate whether visual perception limitations affect one aspect of children's reading ability in the primary grades.

Also included in this study is the need to determine if children with visual perception limitations view abstract and concrete words differently. Brener (1940), Epstein (1962), and Paivio (1963) all reported in their testing of the average student that learning was facilitated when using concrete words. The same type of research needs to be continued with children with visual perception limitations. The visual perception processes of these children need to be studied so the value of differential instruction in word recognition skills can be determined.

Definition of Terms

Abstract words - words that are not associated with any specific instance or object (e.g., nearly, much).

Concrete words - words of tangible, meaningful things or events that can be visualized (e.g., milk, yard).

Perception - a person's mental awareness that is interpreted through the brain process by organizing and understanding the physical environmental experiences of his five sense organs.

Visual perception - the process through which a person selects, organizes, and interprets sensory data of his environment that becomes available to him through channels of sight by way of nerve impulses to the brain.
**Limitations of the Study**

This study is limited to a second grade population of children. It cannot be assumed that children in other grade levels would respond in the same way.

The validation procedures used for developing the test of visual perception were informal and might be subject to more rigorous analysis in the future.

**Summary**

This study was designed to obtain more information about children's recognition of words. The study examined the relationship of visual perception limitations on children's word recognition skills. Variables included a comparison of children with and without visual perception limitations and response to both concrete and abstract words. Limitations of this investigation include the age range of the subjects and the instrument used to identify children with visual perception limitations.
Chapter II

Review of the Literature

**Perceptual Research**

Visual perception is a complex process (Cunningham & Reagan, 1972). The term "perception" is usually applied to the way one comes to know the world or the way one experiences the world of objects and events (Weintraub & Walker, 1966). The research and experiments of visual perception in childhood development have changed through the years. Infant behavioral processes were studied by Freud. Piaget continued studying childhood behavior and emphasized the development of the whole child. Psychological research recently has been led by the study of perception as a learning process. Research in the area of perception has concentrated on visual and auditory perception.

This study is related to the area of visual perception. In all the research, the main point which is emphasized throughout is that:

*Perception does not progress from infancy to a maximal or optimal level in adulthood and remain static and unchanged for the remainder of the life span. Perception of the environment continues to change. Any theory of perceptual development must explain changes from birth to death and not merely from infancy to adulthood.* (Kidd & Rivoire, 1966, p. 80)

As far back as 1888, Preyer studied the perceptual development of color discrimination in children. Many other experimenters investigated visual color perception through the years. Holden and
Bosse (1900) found that infants developed long wave visual perception before short wave. Many more experiments in visual perception were conducted following 1900. Marsden (1903), McDougall (1908), and Valentine (1914) observed fixation, reaching and grasping responses and concluded that infants do visually discriminate color with an age range of six weeks to eight months. It was not until the 1930's that investigators really began using color stimuli which would yield data produced by responses other than fixation, reaching and grasping. Pratt, Nelson, and Sun (1930) used a stabilimeter to study general body responses to visual stimuli. Chase (1937) tested visual wavelength discrimination in infants through a projection screen. More complex equipment was being used to study visual perception. Brightness discrimination was studied in infants by Smith (1936) and Peiper (1937).

Later investigators began studying visual perception in preschool and school age children. An exploratory study of color discrimination in children was carried out by Synolds and Pronko (1949). Experiments continued with school age children as investigators studied all the many varied areas of visual perception. These experiments included color-matching. Smith (1943) observed color-matching development and noted that scores improved rapidly with age. In 1934, Garth and Porter's study showed that the preference for colors increased with age and was more precise in boys than in girls.

By far the most extensive developmental research concerning color visual perception has been related to form and space. Brian and Goodenough (1929) found that children tended to visually match by color rather than by form until the sixth year of age after which the
dominant response was to form. Other investigators studied visual space perception. Visual acuity is reported to have developmental trends. Fantz (1961) tested object and pattern perception and found a differential response to pattern at all ages. He interpreted some degree of form perception as innate, with further development of visual behavior being a complex interplay of innate ability, learning and maturation.

When tests were conducted with school age children, relationships could be made with the children's reading ability to visual perception. It was found that children have a great deal of difficulty discriminating mirror-image and up-down reversal forms, as Davidson (1935) demonstrated by using a matching technique with the letters b, d, p, and q. The developmental stages progressed from a confusion of all four letters to the d, b and p, q identified as the same letter in different orientations, to identification as four different letters. Some part of a child's success in learning words in the primary grades will depend upon where the child has progressed in these stages of development.

Studies by Piaget and Albertini (1954) found that children did not achieve even 75% success in visual closure until the age of seven. Very young children apparently perceived the stimuli as whole and it was not until the age of nine that all the figures were recognized and seen as incomplete. If children do not see a shape correctly until the ages of seven to nine, then it may be implied that it is difficult for children to see word structure correctly, especially children who may be limited in the visual perception area. All children progress
at different rates in varied areas. Children who are progressing more slowly in the area of visual perception would then move slower when learning to read.

Perception seems to be developmental. Mooney (1957) found a significant correlation between age and children's ability in the perception of closure. The study of size perception is also developmental and can be related to reading. In reading, especially early reading and readiness activities, a child must distinguish differences in size. Welch (1939) discovered that practice and increasing age helped improve the children's ability to discriminate size. Long (1941) found that children learned to discriminate size through training and that the amount of training needed varied greatly with individuals. These findings may suggest that training would help children who are limited in visual perception or developmentally behind their peers. Piaget emphasized the need for active exploration during a child's pre-school years. This exploration is early training for the child and therefore critical in the development of the perception of objects in three dimensions for the child's future reference.

Witkin (1954) demonstrated the developmental growth of visual perception by testing a wide age-range of students. He found that at each age level there was a wide range of individual differences in performance. Even in the youngest groups the range of scores and the extremes of the range were quite similar to those of adults. It would seem that individual differences in perception appear early in life and remain consistent in their perceptions under different conditions.
These individual differences in the growth pattern noted in past experiments should be kept in mind by teachers and all associated with children.

As research notes developmental trends, Doudlah (1968) states that:

A young child comes into the world with a degree of genetic endowment and the physiological mechanisms necessary for possible survival. However, the attention and nurturing he requires alters his biological potential from the beginning. Early influences are impressed on him. (p. 38)

A child establishes a foundation of experiences on which he will later draw to conceptualize letters, numbers and language. Not all children have this advantage however. They may have similar experiences but cannot extract meaning from them. These children may have deprived environments or hereditary factors causing limitations. It has been estimated that at least ten percent of children who have average intelligence at school are reading inadequately for their grade placement (Doudlah, 1968). As stated by Carter (1970), many children are not developmentally ready for reading. Carter says that learning to read requires visual readiness. Often children with difficulties in school have visual perception limitations. Liepmann (1973) notes that everyone has a perceptual difficulty which diminishes his effectiveness to some extent. Adults also have these limitations but can shape their lives around them. Children need to overcome their perceptual difficulties as early as possible.

**Perceptual Theories**

To understand and appreciate the present state of visual perception, past and present perceptual theories must be reviewed. The
Empiricists believed that at birth the mind is a blank slate upon which experience will leave its mark. All learning, then, is a result of perceiving. Perception is a passive automatic activity. Everything that we know comes through our senses (Kantor, 1959).

Another idea of perception came from the Nativistics. They were of the opinion that the mechanisms and the "how" of perception were innate and they existed prior to experience. The nativists were interested in the mental process. The theory of Psychophysiology was much like the empiricist approach. Perception was considered a function of the brain, occurring inside the person. In perception, the brain perceives only the conditions that the nerves sense. Throughout its long history, perception theory reveals conceptions of the perceptual process as involving the mind's passive recording, storing, and comparing of mental images to active processes of the brain and nerve system (Kantor, 1959). The function of the mind in the perceptual process is to compare and interpret mental images, and by doing so, perceive. There is then no perception unless the mind in some way interprets the sensory data that comes to it.

Modern theories such as the Gestalt configurational approach takes immediate experience as their subject matter. They explain perception in terms of wholes that are more than the sum of their parts. The nervous system plays a great part in its effect of the whole by a field force. Topological field theory reinforces gestalt perceptionists but shows indifference to the link of the nervous system. The Cell-assembly and Phase-sequence theory introduced muscle movements and motor components into perception. The Sensory-tonic field theory
states that perception has an entirely sensory foundation (Kidd & Rivoire, 1966).

In the Adaption level, Perceptual Norm and Frame of Reference theories, an individual person sets an average for himself which becomes a standard of reference by which other things in the environment are perceived. The Functional and Molar theories represent perception as a function of some sort of weighted average of our past experiences. These are unconscious processes from our senses (Bennett, 1978).

The Directive-state theory considers the nervous system as the perceiving mechanism. A person's needs and experiences are included in the brain processes. Perception was seen in the light of thinking, recalling and other cognitive processes in the Hypothesis theory. A process of hypothesis confirmation or rejection guides the individual's adjustment to his environment (Kantor, 1959).

Behavioral theories of perception, of which there are two types, lean heavily upon learning as a main principle. Hull's S-R theory interprets learning in terms of habit strengths and reaction potentials. Tolman's S-S theory is closer to the Gestalt approach. The System theory is a new perceptual trend that has come from machines and mathematicians. Machines are open systems and, like organisms, they have a continual input. A stable relationship exists under constantly changing environmental stimulus (Epstein, 1967).

Allport (1955) has tried to synthesize the major contributions of all the theories. Structure forms the foundation for Allport's theory. The act of perceiving structures all ongoing events. These
events are generated, the excitation sets off another event, these excitations set off muscles and they all feed into the brain.

Kantor (1959) has been developing an Event-oriented theory. the interaction of variables is of most importance. Kantor's interest is not in what goes on in the organism but what is in the total integrated field. Analysis is in terms of functions of all the factors. Thinking, learning and perceiving are located in the total field because all the variables in a field are necessary for their occurrence. Kantor states that one does not study persons but inter-behaviors of all functions.

Perceptual Testing

Perception is information processing (Bennett, 1978). Many children with reading problems and perceptual limitations cannot process information and are not diagnosed early enough. Early identification of the child with a learning disability is the key to effective treatment. In 1978, Usova stated that the majority of studies concluded that learning problems can be remediated through a variety of programs and training techniques after the problems have been predicted and diagnosed.

There is also a psychological value in a perceptual motor screening program that is designed to evaluate kindergarten and first grade children. The child's test behavior and performance may also show perceptual, organic and emotional problems (Buchholz & Dick, 1976).
Types of testing that may be used for early detection of visual perception limitations follow:

1. Informal testing by the classroom teacher which would include visual matching tasks with words or letters. Also, near-point and far-point copying and spelling analysis. Additional factors a teacher can look for are head close to the page, matching letter-by-letter, constant rechecking, using fingers to hold place.


3. Spache Binocular Reading Test which uses both eyes during the act of reading (Mast Development Co. Keystone Div.).


5. Goodenough Draw-a-Person - Tests visual perception with motor functioning (Goodenough, 1965). The developmental level of body image in the child is important in the assessment of visual perception functioning.

6. Gesell Developmental Schedules (Gesell, 1946). The developmental level of visually perceiving and copying forms can be obtained by this test.


Subtest #3 Visual Memory
Subtest #6 Visual Association
Subtest #7 Visual Closure
Subtest #10 Manual Expression
8. **Analysis of Developmental Learning Skills** (South Bend Community School Corp., Ind., 1977). School readiness test designed to diagnose lags in developmental skills in four and five year old children. The subtests include motor coordination, visual performance, visual memory, visual perception and perceptual language development.


10. **Yellow Brick Road** (Kallstrom, 1975). A mini-screening test that provides an immediate profile of the pre-school age child. Subtests include visual, motor, auditory and language.

11. **Kelly Group Visual-motor Screening** (Kelly, 1978). Group screening figures for kindergarten and first grade. Test is designed to identify children four to eight who need individual diagnosis of visual perception.

12. **Two-alternative Perception Test** (Goodman, 1973). Test is designed to investigate whole vs. part perception.

13. **Survey of Space Relations Ability** (Caste & Ruch, 1949).


16. Study of the growth pattern of the child.

A case history would give information pertinent to childhood development. If a child has a history of delayed development in physical coordination, skills and social performance, the possibility of below level expectancy of visual perception abilities is high.

It is suggested that more than one of the above tests be used for early detection of visual perception limitations. A combination
of the classroom informal testing, the case history and one or more of the validated perception tests would be best to understand the perception processes of a child. Once early detection has been made, procedures for remediation and training can then begin.

**Visual Perception Limitations**

There are many children to be found in our midst, children who are struggling, or will be struggling, with formal education. It is important to recognize, when children are very young, that their development is other than normal. (Ashlock, 1969, p. 52)

Some children who are having difficulty in school have perceptual difficulties. These children may have small delays or great deficits in visual perception. Visual perception deficits fall into patterns of a syndrome. Each part of the deficit may impinge upon any number of other factors or may function independently. Visual perception dysfunction involves the degree of stimulation. It represents an inefficient developmental functioning that is a handicap to the cognitive process. It is related to cognition and emotional development.

Factors accompanying visual perceptual dysfunction may be short attention span, hyperactivity, distractability, social adjustment difficulties, delayed motor perceptual ability, depressed academic achievement, inadequate body image and low frustration level (Ashlock, 1969).

If a problem of visual perceptual dysfunction is detected in the very young child and the proper training is begun, there is more likelihood that the child will perform adequately in the future. Schultz (1965) stated that, "Contact with a rich sensory environment
is necessary in childhood to develop an adequate internal model of the external world" (p. 11). This environment can be added through classroom instruction for the child with a visual perception limitation. Rosner (1973) states that:

Reading instruction should be modified to make it compatible with students perceptual skills. Assessing the adequacy of a student's perception is pertinent to planning his reading instructional program--not because the teacher can then teach to a preferred modality, but, rather because it can help the teacher determine whether the student has acquired the basic skills that are assumed by the particular instruction program that is to be used in the classroom. (p. 2)

When a child reaches school age, any visual perception problem can affect learning unfavorably and thus the beginning of a learning disorder can develop. Goins (1958) reports that there exists "a general power of visual perception related to reading" (p. 5). A child's rate of performance in the classroom is affected by his lack of visual perception functioning. Therefore, when a child transposes letters, words or reverses letters, he learns reading, writing, arithmetic and spelling at a much slower rate than his classmates.

It is also important to remember that movement of the body in space may show down a child's proper visual perception functioning (Kephart, 1960). A child may be aware of the requirement for performing a task but unable to do it without excessive training in the performance of the task. Strauss and Lehtinen (1947) state that "one basic characteristic of perceiving is that perception is made of a whole, that it occurs immediately and unanalytically, all at once and nothing first" (p. 92). A child with perceptual limitations may appear to perceive a whole by parts and be unable to organize these parts into a whole.
One must note that emotional problems may accompany visual perception limitations and dysfunctions. These emotional problems may be shown in guilt, anxiety and/or hostility. They may interfere with the normal development of the child's self-concept and the child's behavioral patterns may be affected unfavorably. Children with visual perception limitations will show complex behavior and performance patterns. The development of the child, his present environment, and the degree of visual perception limitation all affect the child's attitude and performance in school.

Children show individual differences in perception. Any given group of children will vary in their perceptual development. The speed with which they can respond to varied auditory or visual stimuli will differ, and their level of development will vary. (Aaron, 1968, p. 131)

It is important to view the subject as a child with distinct individual differences in the levels of development in physical, emotional, social, speech and language areas. As developmental levels of each child vary, the needs of each child will vary and so will his reading ability and performance in school.

The functional properties of the visual system improve with increased age (Fisher, 1979). An important aspect that Fisher noted about the individual perception of a person is that "discontinuity seems to be the rule in many aspects of perceptual development" (p. 3).

Early, precise identification of visual perception limitations is imperative if a child is to function adequately in a school setting since visual perception is closely related to the process of learning. Cunningham and Reagan (1972) state that:
Visual perception is that process by which impressions observed through the medium of the eye are transmitted to the brain where relationship to past experiences takes place. This process is imperfect in many children of various ages. These children may be unable to perform, on one or more areas, at the level of most children of the same age. Terms such as unwillingness to perform, immaturity, or mentally retarded may have been used in describing these youngsters, while in reality, inability to adequately perceive visual stimuli may be part of the problem. (p. 45)

If a child is unable to perceive objects or words through the eye in a normal manner, the process of learning is likely to be stopped or slowed down. The degree of the limitation is most important. The child with a visual perception limitation may perceive a visual image but not recognize it, may recognize the image but not retain it, may perceive, recognize and retain the image but lack the ability to associate this image with past visual experiences. Since visual perception affects a child's learning, we must understand that learning is a process of acquiring a skill through experience, practice or exercise. This may happen in a school setting or without a teacher by trial and error learning which is gained through visual perception. This visual perception includes recognition, image retention and association with previous visual experience (Cunningham & Reagan, 1972).

Randhawa (1977) states that learning encompasses all changes in behavior arising from the individual responses to visual stimulation. Visual learning develops in stages. Randhawa notes that "visual learning is dependent on the maturation level and extent of prior learning experiences. Visual learning is most likely to result in active participation by the learner." (p. 5).
The visual learning of a child with visual perception limitations will be affected by their degree of deficiency. This degree may be determined through testing. As mentioned earlier, testing is an important aspect of the diagnosis and remediation of perceptually limited children. Children working below the expected level of visual perception performance may fall into three categories, that of learning disabilities, aphasia, and mental retardation (Aaron, 1968).

Children with learning disabilities are those who perform below the expected level in one or more area. However, they may perform above the expected level in other areas (example: arithmetic). Many of these children go undetected as having visual perception limitations but they may show other behaviors such as acting out, hyperactivity, distractibility, uncontrolled outbursts, a hostile, aggressive and negative attitude, or the child may become quiet and withdrawn (Bader, 1980).

Many children can recognize, retain and associate visual stimuli but cannot transfer learned information into speech or writing. These children have delayed learning caused by some degree of deficit in visual perception. The present study is most concerned with these visual perception limitations.

The aphasic child most often has perceptual handicaps especially visual. Aphasia is a loss of a child's language due to a type of brain injury (Ashlock, 1969). Unless the aphasic child is severely handicapped, it may be difficult to detect this child in the classroom. Speech and language problems and disorganization most often will develop as will behavioral characteristics as hyperactivity, short
attention span, inconsistency, aggressive behavior, low frustration level and a defeatist attitude.

A child with mental retardation will show below average general mental functioning which began in the developmental stage. Mental retardation shows in the impairment of the ability to adapt to society. There is a great range in the degree of this dysfunction. However, in most cases mental retardation includes delayed speech and language development and also delayed perceptual ability. Children with mental retardation may show the same disorders and behavior as aphasic children and children with visual perception limitations; however, the signs may be more numerous and more severe.

Aaron (1968) states that visual perception can be improved through training programs and improvement operates favorably on learning to read. Since the main purpose of detecting a child with visual perception limitations is to help remediate his problem, it is most important to know the manner in which the learning of the child is affected by the handicap. The child needs to be studied and training begun.

As Frostig (1978) states, "the main goal of perceptual training is to help the child become aware of and sensitive to the world around him" (p. 8). The earlier this training begins, the better it is for the child. D'Annunzio (1972) found that a pre-school which stresses diagnosis and remediation is greatly superior to a regular nursery school. Through an intensive pre-school situation, children with visual perception limitations can be helped early, even before the process of reading is begun. Frostig (1978) reinforces this idea by stating that
"perceptual training furthers the child's cognitive strategies he needs later on: attention, visualization, following a model, analyzing a task, and so on" (p. 1). Children with a visual perception developmental delay benefit from this training for a long time, well into their school years. "Perceptual training should continue in the learning deficit children as long as improvement in perceptual skills is observed" (Frostig, 1978, p. 5).

Perception is a most important human process. Teachers and educators must realize the importance of perception. Kidd and Rivoire (1966) conclude that:

Each of the individual's reactions is preceded by perception. No one can fear, hate, love, learn or recognize anything or anybody unless he first involves himself in seeing, hearing, touching, tasting, or smelling. Perception is the sine, qua non of psychological adaptiveness of organisms to their life circumstances. It is the warp and woof in which all the rich variety of responses are embedded. (p. 57)

When the significance of perception is noted, then early diagnosis and screening of children can begin with remediation of the child with visual perception limitations.

__Word Recognition Skills__

"The first step in learning to read one's language is learning the printed code for speech" (Chall, 1967, p. 24). Lewis (1968) states that word recognition refers to the child's ability to recognize a word and its meaning in context. Before a child can recognize a word, he must have the opportunity and skills necessary to identify that word.
Word recognition is the process of producing the sounds represented by the printed symbols and putting them together into words. Sometimes it is called 'identification,' 'decoding,' or 'breaking the code.' However, word recognition is only the initial step if one considers reading to be the process of getting meaning and understanding from printed symbols. In completing the reading act, the individual reacts to the material and integrates what he has read with what he already knows. In this way, his ideas and attitude change and his intellectual growth continues. (Wittick, 1968, p. 58)

Bond and Tinker (1967) state that skill in word recognition is a fundamental part of the equipment of a capable reader at any level. As a child shows growth in reading, the methods of teaching him gradually demand more and more independent word recognition. The child who has failed to establish an effective means of identifying recognizing words for his level will be handicapped in all other aspects of reading.

Ford (1968) agrees and reaffirms the fact that word recognition is an important basic reading skill. It is in word recognition skills that retarded readers most commonly are deficient.

Since auditory and visual perception are related to success in reading, as Aaron (1968) notes, the child with visual perception limitations will invariably have difficulty in word recognition skills and consequently in all other areas of reading. Ashlock (1969) agrees that perceptual factors are of the utmost importance in learning to read. He states that:

Perception is the mental interpretation of the sensations received from stimuli and visual perception is the mental interpretation of what the individual sees. Adequate perception is of central importance in the educational process. A perceptual disorder can seriously hamper a child's learning. (p. 63)
Whether a child has visual perception limitations or not, he has to begin reading about what he knows. Serious deprivation of concrete experiences can make reading an insurmountable task for many children.

Ashlock (1969) reports that in considering the relationship of experience to reading, one must keep in mind the relationship between experience and the child having the experience. For the slow learner, Ashlock states that the further removed the reading material is from his concrete experiences, the more difficult the task. He views the average child differently and states that the average learner must have experiences, but it does not matter whether these experiences are concrete or not.

The slow learner and the child with visual perception limitations seems to be more affected in reading by his concrete experiences. In beginning reading, word recognition plays a great part in reading. There are three parts of word recognition: (1) seeing the word correctly, (2) saying the word correctly, and (3) knowing the correct meaning of the word. All these parts of word recognition deal with the areas of perception in children. Learning words becomes a difficult process, especially for the child with visual perception limitations.

Since word recognition in reading and concrete experiences are so interrelated, it is important to look further into these areas. It is necessary to see their relation in past experiments and also to see if instruction can be improved for the average learner and also especially for the child with visual perception limitations.
It has been indicated by Ashton-Warner (1966) that personally relevant material and words with intense meaning are very helpful when teaching a child to read. She observed that the student selectively chose words with special meaning and emotional content for himself and rejected those which held little significance to him. Impersonal words such as "up," "down," and "come" were usually not selected. Ashton-Warner noted that even though certain words can be learned by the average reader, this does not necessarily suggest that those words should be included in every child's reading vocabulary. Dewey (1913) argued the same point that subject matter must be selected in terms of the child's urgent needs and interests.

When dealing with the average learner, many experimenters found that a child's recognition and retention of words is more efficient when using meaningful concrete words. Epstein (1962) found that there is more learning by the subjects when using concrete nouns than when using abstract ones. Through his studies, Brener (1940) discovered memory span of subjects for concrete words to be slightly greater than for abstract ones. Paivio (1963) established that adjective-noun paired associates were more effective when the nouns were concrete. Crow and Crow (1965) and Michelson (1969) both noted that reading materials of high meaningfulness were usually learned and retained more easily and for a longer period of time than meaningless words. Dukes and Bastian (1966) confirmed in their experiments that concrete words were recalled better than abstract ones. Older (1960) stated that children in her experiment made greater gains in learning and recognizing emotionally charged words than neutral ones. Jorm (1977) determined that high-imagery
words were easier to read for poor readers only. However, when children are required to learn to read words by the whole word method, word imagery predicts ease of learning for both good and poor readers. Hargis and Gickling (1978) agree with Jorm that low imagery words are more difficult to recall than high imagery words and consequently need more repetition and exposure. Hargis and Gickling used words such as house, tree, and car as words with high imagery level. Day, mile and time were considered examples of words with considerably lower imagery level. "High imagery or concreteness of a word is related to how easily a mental image may be formed of the referent the word represents" (Hargis & Gickling, 1978, p. 870). In their study, Hargis and Gickling found that imagery can in fact be considered an important variable in the acquisition of sight words. High imagery appears to enhance development of word recognition at a far better rate than low imagery. Olson and Pau (1966) state that highly emotional words may act as a bridge for the nonreader or the poor reader to become a part of the reading world. The secret of entering a child's mind is through the use of words that are important and significant to him, that is, through ideas to which he has already acquired an emotional reaction. Pikulski (1971) found that correlations in reading deficiency and perceptual skills decline with age. This may suggest that visual perception skills are more important to the establishment of word recognition than to comprehension skills. The child with visual perception limitations seems to have an added problem in the acquisition of beginning reading skills (Dawson, 1971). Research has suggested that concrete words and experiences may help the child with visual
perception limitations. Early detection and training will help this child improve in word recognition skills and other needed reading skills.

Summary

Perception is known to be central to our life processes. Perceptual theorists and researchers have all been trying to understand perception. Most believe that perception is a developmental process that continues to change from childhood to adulthood.

Children learn by interacting with people and objects but do so at different rates. All children have varied potentials for learning. Some children that have difficulty in reading have visual perception limitations. Often, problems can be noted in word recognition. Many experimenters found that a child's word recognition is more successful when using meaningful concrete words. Early identification through visual perceptual testing of this child is the key to effective treatment. Children with visual perception limitations can grow and cope with visual learning in and outside the classroom.

The present experiment deals with concrete and abstract words with the average learner and the child with visual perception limitations. This experiment was undertaken to bring together past research in the areas of visual perception and word recognition skills. The purpose of this study is to investigate the effect of visual perception limitations on word recognition. Also important in this investigation are the possible differences in the recognition of abstract and concrete words among children with visual perceptions and children without visual perception limitations.
Chapter III

Design of the Study

Purpose

This study sought to determine if a second grade child's visual perception limitations affect his/her word recognition skills. It was the primary purpose of this study to determine if children with visual perception limitations had more success recognizing abstract or concrete words. As a secondary purpose, a comparison was made between the word recognition performance of children with visual perception limitations and the performance of children who did not have such limitations. The achievement of each group of children was measured in the categories of both abstract and concrete words.

Hypotheses

1. There is no significant difference between the ability to recognize abstract words and concrete words among children with visual perception limitations.

2. There is no significant difference in the recognition of abstract words between children with visual perception limitations and children without visual perception limitations.

3. There is no significant difference in the recognition of concrete words between children with visual perception limitations and children without visual perception limitations.
Methodology

Subjects

The subjects for this study were fifty second grade children from a middle class community in upstate New York. The range in age varied from seven to nine years old. The subjects were divided into two groups. The first group consisted of twenty-five students identified by an investigator-developed instrument as having visual perception limitations. The comparison group, also twenty-five children, had similar IQ and reading achievement ranges but showed no evidence of visual perception limitations.

Instruments

A nine page visual perception test (Appendix A) was developed by the investigator to identify subjects with visual perception limitations. The test included varied types of visual perception tasks which were modeled after Potter and Rae's (1973) visual discrimination and visual memory test.

The Peabody Picture Vocabulary Test was administered to the children as a measure of intelligence.

In addition to the instruments used to identify the subjects, a vocabulary list of fifteen concrete and fifteen abstract words was used in this study. These words were selected from the Stone's Graded Vocabulary List and the Gates Vocabulary List. The reading level of all words was held constant at the 1-1 to the 2-1 level. The words in both the concrete and abstract lists were matched for beginning sound and number of letters in the word (4 to 7), with each group having an equal number. The concrete word list included words as beach, beetle,
and cereal. The abstract word list included words as beyond, boast, and cause. The complete word list can be found in Appendix B.

Procedure

The first step of this study was to give the visual perception test to two hundred and fifty second grade students. The test was administered by the investigator in homeroom groupings of twenty-five children. Directions for the test are included in Appendix A. The children with errors falling into the lower ten percent range were identified by the investigator as having visual perception limitations.

In the second step, only those students whose reading achievement, as judged by the classroom teacher, fell within the 1-2 and 2-1 reading level were included in this study.

For the purpose of this study, a group of twenty-five children with visual perception limitations was formed. These children had been identified by the visual perception test and were reading in the appropriate reading level range.

The Peabody Picture Vocabulary Test was then administered as the third step of the study to determine the IQ range of all students involved in the study.

A comparison group of twenty-five second graders was then identified. They had not demonstrated visual perception limitations in the initial testing and were comparable to the students being studied in both IQ and reading achievement.

In the fourth and final step of the study, all fifty subjects were tested individually. The children of both groups were drawn
from their homerooms, one by one, to be tested. All testing was completed by the investigator in a quiet area of the school. Over a period of three consecutive days, the investigator tested each subject on his/her recognition of words written on flash cards. The flash card words were made from the two word lists of fifteen concrete and fifteen abstract words (Appendix B). A trial set of two flash card words was used to make the children comfortable with the testing situation. All thirty words were presented in random order at six second intervals. The results of each child's individual responses were recorded for later analysis.

**Data Analysis**

A *t* test for dependent means was performed on the data for the first hypothesis. *T* tests for independent means were performed on the data for both the second and third hypotheses.

**Summary**

A comparison of the word recognition performance was made between twenty-five children identified as having visual perception limitations and twenty-five children not having those limitations. Both groups of children fell in the same age, IQ and reading level ranges. All fifty subjects were tested individually by the investigator with flash cards of concrete and abstract words presented at timed intervals and in random order. Results were analyzed through a series of *t* tests.
Chapter IV

Analysis of Data

Purpose
The purpose of this investigation was to examine the effect second grade children's visual perception limitations have on their word recognition skills of abstract and concrete words. Also, a comparison was made between the word recognition performance of children with visual perception limitations and the performance of children who did not have such limitations. All comparisons were made with data derived from t scores.

Hypotheses
The null hypotheses tested were:

1. There is no significant difference between the ability to recognize abstract words and concrete words among children with visual perception limitations.

2. There is no significant difference in the recognition of abstract words between children with visual perception limitations and children without visual perception limitations.

3. There is no significant difference in the recognition of concrete words between children with visual perception limitations and children without visual perception limitations.
Analysis and Interpretation

To test the first hypothesis that there is no significant difference between the ability among children with visual perception limitations to recognize abstract words and concrete words, a \( t \) test for dependent means was used. Results are shown in Table 1.

Table 1
Mean Scores in Recognition Tests of Concrete Words and Abstract Words for Children with Visual Perception Limitations

<table>
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<th></th>
<th>Concrete</th>
<th>Abstract</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Mean of Scores</td>
<td>12.8</td>
<td>11.4</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
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<td>1.970</td>
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<tr>
<td>Calculated ( t )</td>
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<td></td>
<td>4.950</td>
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<tr>
<td>Critical ( t )</td>
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<td>2.797</td>
</tr>
</tbody>
</table>

( \( \alpha = .05, \) df = 24)

The calculated \( t \) score was 4.95. This score was more than the critical \( t \) score at the .01 level (2.797). The results of this \( t \) score rejected the first hypothesis. Children with visual perception limitations recognized concrete words more successfully than abstract words.

A \( t \) test for independent means was used to compare the recognition of abstract words between children with visual perception limitations and children without visual perception limitations. The results of this \( t \) test for the second hypothesis appear in Table 2.
Table 2
Mean Scores in the Recognition of Abstract Words for Children With and Children Without Visual Perception Limitations

<table>
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<tr>
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<th>Group with Visual Perception Limitations</th>
<th>Group without Visual Perception Limitations</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
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<tr>
<td>Mean of Scores</td>
<td>11.4</td>
<td>12.4</td>
<td>3.2802</td>
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<tr>
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<td></td>
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<tr>
<td>Calculated t</td>
<td></td>
<td></td>
<td>1.6139</td>
</tr>
</tbody>
</table>

\[ t_{\text{crit}} (40) = 2.021, \ p < .05 \]
\[ t_{\text{crit}} (60) = 2.000, \ p < .05 \]

The calculated \(t\) score was 1.6139. This \(t\) score failed to reject the second null hypothesis. There was no significant difference in recognizing abstract words between children with visual perception limitations and children without visual perception limitations.

The ability of children with visual perception limitations and children without visual perception limitations to recognize concrete words was also compared by a \(t\) test for independent means. The results of the test for the third hypothesis are summarized in Table 3.
Table 3

Mean Scores in the Recognition of Concrete Words for Children With and Children Without Visual Perception Limitations

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<th>Group with Visual Perception Limitations</th>
<th>Group without Visual Perception Limitations</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
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<td>25</td>
<td></td>
</tr>
<tr>
<td>Mean of Scores</td>
<td>12.8</td>
<td>13.8</td>
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<tr>
<td>Standard Deviation</td>
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<td></td>
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<tr>
<td>Calculated $t$</td>
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<td>2.1485</td>
<td></td>
</tr>
</tbody>
</table>

$t_{crit}(40) = 2.021$, $p < .05$
$t_{crit}(60) = 2.000$, $p < .05$

The calculated $t$ score was 2.1485. This score rejects the third null hypothesis. The resulting $t$ exceeds the critical $t$ at the .05 level. The children without visual perception limitations performed significantly better at the recognition of concrete words than did children with visual perception limitations.

**Summary**

Findings of the investigation rejected the first null hypothesis. Evidence derived for statistical analysis showed that children with visual perception limitations were able to recognize concrete words more successfully than abstract words. This main purpose of the study showed significance at the .01 level.
The data failed to reject the second null hypothesis. There was no significant difference in the recognition of abstract words between children with visual perception limitations and children without visual perception limitations.

Results of the data analysis rejected the third null hypothesis. There was a significant difference in the recognition of concrete words favoring children without visual perception limitations when compared with children with visual perception limitations.
Chapter V

Conclusions and Implications

Purpose
The purpose of this study was to determine if the visual perception limitations of identified children affect their word recognition skills. The investigation explored whether children with visual perception limitations had more success recognizing abstract or concrete words. This study also compared the word recognition skills of children with visual perception limitations with children without such limitations. The achievement of each group was measured in the categories of both abstract and concrete words.

Conclusions
Findings showed that children with visual perception limitations were able to recognize concrete words more successfully than abstract words. As stated in research, this may be due to the fact that even though the concrete and abstract words were at the same reading level, the concrete words were easier to understand. The children can relate to these words as they are more a part of their tangible environment.

Findings also showed that children without visual perception limitations performed significantly better on the recognition of
concrete words than did children with visual perception limitations. Children with visual perception limitations have difficulty perceiving objects, shapes and letters. This study shows that these children also have difficulty with the area of reading that deals with word recognition and perceiving these words. The same words are not as difficult for children without visual perception limitations.

No significant difference is shown in the abstract word recognition performance of children with visual perception limitations and children without visual perception limitations. This may be due to the fact that since these abstract words are vague and sometimes meaningless words to the student, both groups had equal difficulty.

Overall findings indicate that a child with visual perception limitations does have more difficulty in word recognition than the child without visual perception limitations. Also concrete words are more difficult for this child with visual perception limitations. Abstract words seem to be a problem for all types of children.

**Implications for Research**

This study was limited to a second grade population. It would be interesting to replicate this study using an older or younger student population and then compare the results with these second grade subjects in this study.

It is important to continue the research for further information into the difficulties of children with visual perception limitations. Investigations to see whether children with visual perception limitations have difficulties in areas of language related to reading such
as comprehension, spelling, punctuation, or language development would be helpful.

Future research could continue the examination of abstract and concrete word recognition. Words from each group could be directly taught with posttests used to measure retention. The topic could be investigated over short term and long term using students with visual perception limitations and students without visual perception limitations.

Still dealing with meaningful and non-meaningful material, it would also be interesting to test comprehension of paragraphs using mainly abstract words and paragraphs using mainly concrete words. Comparisons could be made at different grade levels.

Future research could include a study to identify a large group with visual perception limitations. This group would be divided into two groups. Techniques would be developed to improve the word recognition ability of one group and the other group would be used as the control group. The groups would be tested again to see if significant gains were made in the ability of the experimental group due to teaching.

Also for further research and investigation, norms could be developed for the visual perception test used in this present study. The instrument used here does have content validity to the extent that the investigator modeled this test after many other visual perception tests that have been formally validated. More rigorous procedures to establish validity and reliability remain to be carried out by future investigators.
Finally, the ultimate follow-up for future research would be a longitudinal project. In that study experimenters would trace subjects with visual perception limitations and subjects without visual perception limitations from first to eighth grade on word recognition skills. Testing the same subjects every year would determine various changes and developmental growth. This type of study would be enlightening and would show a clearer picture of children with visual perception limitations.

**Implications for Classroom Practice**

Since differences were noted in this study, children with visual perception limitations need to be identified in the classroom. Reading programs need to be varied to help these children. Special exercises could help in the areas where they have difficulties. The strengths these children have (e.g., concrete words) could be used to heighten their reading experiences. Knowing that a child with visual perception limitations has more success with concrete, meaningful words could help vocabulary development in their reading program.

It is also important for the classroom teacher to know that a child without visual perception limitations has more difficulty recognizing abstract words. This could be incorporated into the total reading program.

The classroom teacher seems to be the key to any reading program's success. It is important that the teacher be aware of each student's strengths and weaknesses. The teacher must know which
children have visual perception limitations as they would need to know limitations in any other area of reading development. Visual perception is a factor that affects a child's word recognition ability.

In order to have an impact on the classroom, teachers need to be educated to identify children with visual perception limitations and also how to help their students overcome their difficulties.

**Summary**

Children with visual perception limitations recognized concrete words more successfully than abstract words. A significant difference was noted when recognizing concrete words between children with visual perception limitations and children without visual perception limitations. No significant differences were found in the abstract word recognition of the two groups.

More research needs to be developed for the children with visual perception limitations. Research could include studies at different grade levels, studies involving other areas of reading, retention of abstract and concrete words, further validation of the visual perception test and longitudinal studies to determine developmental growth.

In the classroom, the child with visual perception limitations needs to be identified and given remedial attention to improve his reading. Teachers need to know more about visual perception to improve the classroom reading programs and to help each child work to full potential.
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Appendix A

Visual Perception Test
Appendix A

**Directions for Visual Perception Test**

1. Find the shape or letter in the row that is the same as the shape or letter on the left side of the page and circle it with a pencil.
   Example: \( \triangle \) | \( \square \) \( \triangle \) \( \circ \) \( \circ \)

2. Find the shape in the row that is the same as the shape on the left side of the page and circle it with a pencil.
   Example:

3. Find the crescent moon and trace it.
   Find the star and trace it

4 and 5. Find the group of letters that is the same as the group of letters on the left side of the page and circle it.
   Example: \( \text{bp} \) | \( \text{bq} \) \( \text{pd} \) \( \text{bd} \) \( \text{bp} \)

6 and 7. Draw the same design as the design on the left by connecting the dots.
   Example:
8 and 9. Look at the card I am holding in front of you. Look closely at the design and find that design on the paper in front of you and circle it with your pencil.

Example: \[\triangle \triangle \] was held up.

Choices were: \[\triangle \triangle \triangle \triangle \triangle \]

Also nonsense word cards were held up.

Example: \[pyret\] was held up. Choices were: prtty prety
pryet pret
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Appendix B

Concrete and Abstract

Word Lists
Appendix B

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