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A COMPARATIVE STUDY OF THE VISUAL PERCEPTUAL ABILITIES
OF SECOND GRADE CHILDREN FROM TWO DIFFERENT CULTURAL
AND SOCIO-ECONOMIC BACKGROUNDS

by

Mr. Michael L. Dunn

A RESEARCH PAPER
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CHAPTER I

THE PROBLEM

Introduction

Since the end of World War II, a high premium has been placed on the man and woman with a college education. Growing out of this demand for more college educated personnel has arisen a deepening concern and criticism over the state of our elementary and secondary schools. The subject area which has received the most criticism is reading. Parents and educators have asked: "Why are so many failing in the most basic of all subjects - reading?" Many and varied reasons and explanations have been given. Visual perception, due to its unique function within the anatomy of the human being, is an important factor in becoming a proficient reader. Howard Coleman says of the eye and learning,

The eye is anatomically and embryologically an extension of the brain, and the largest single portion of cortical area devoted to the reception of sensory stimuli is devoted to vision. If a child perceives his space world with distortion and confusion academic learning will probably be difficult no matter what the measured intelligence level.¹

Growth in education has lead to the discovery of many more types of learning disabilities, which in previous times were ignored. Today the exceptional child, at both ends of the fulcrum, is receiving

Howard Coleman, "Visual Perception and Reading Dysfunction," Journal of Learning Disabilities, I (February, 1968), p. 116.

more attention than the same child of twenty years ago. In recent years attention has been focused on the perceptually handicapped child.

Mounting tensions in our inner-city schools have also posed numerous problems concerning the child of a different cultural and a lowered socio-economic background. Notice should be drawn to the word "different." All too often we read of children with a deprived cultural background. It is the author's opinion, however, that everyone has a culture. This culture might be inculcated with values and mores not completely understood by those of other cultures even though it is most assuredly a culture.

To contribute even in a very small way to the search for causal factors in the development of perceptual powers is the purpose of this study.

Statement of the Problem

The problem of this study, therefore, is to determine if there are any significant visual perceptual differences, as measured by the Frostig Developmental Test of Visual Perception, between second grade children of two different cultural and socio-economic backgrounds. More specifically, the writer is searching for answers to several specific questions;

1. Do children from two different cultural and socio-economic backgrounds differ significantly on any specific aspect tested on the Frostig Developmental Test of Visual Perception?
2. Or are there perhaps other factors which effect visual perceptual abilities much more than intelligence?

Significance

No one would question the importance of a child's possession of good visual perceptual powers in order to read the printed page. Numerous studies have shown the importance of visual perception as related to success in reading.

Marianne Frostig concluded, after observation and testing, that visual perception could be sub-divided into five factors: figure ground perception, form constancy, position in space, eye-motor coordination, and spatial relationship. In 1961, Dr. Frostig and her associates published the results of a group test designed to screen those children who have a perceptual problem in one or any of the above five areas. Since that time a number of research studies have been carried on to seek more information concerning visual perception, as predicted by the Frostig Developmental Test of Visual Perception, and its relation to reading achievement.

It would seem plausible for us to proceed into further research on two basic assumptions: 1) Visual perception seems to be related to reading success; and 2) the Frostig Developmental Test of Visual Perception seems to be a fairly accurate screening device for determining visual perceptual malfunctions.

Assuming the above to be true and, in light of the present day attitudes toward the inner-city child from a so-called "deprived background", it might be advantageous to determine if his background, when intelligence is a controlled variable, is a hinderence in the development of his visual perceptual powers as in opposition to the so called "privileged child" of the more affluent suburban area.

The author of this paper was unable to find in the literature

any such comparative studies. It would be hoped this preliminary study would lead to more thorough research in this area.

Scope and Limitations

The subjects in this study were second grade children of St. Michael's School, Milwaukee, Wisconsin and St. Catherine's School, Brown Deer, Wisconsin with intelligent quotients between 95 and 105, as determined by the California Test of Mental Maturity. Approximately twenty children from each school meeting these criteria were given the Frostig Developmental Test of Visual Perception.

Tests by their very nature, no matter how valid and reliable, offer certain limitations to a study. The size of the sample, lack of standardized criteria for measuring the backgrounds of the two groups are limitations to this particular study.

Plan of Research

The method of this research is a survey involving measurement and statistical techniques. Steps in the procedure include the following: The administration of the California Test of Mental Maturity and the Frostig Developmental Test of Visual Perception to twenty children from each school. The test scores will be subjected to the t-test to determine if there is any significant differences on each of the sub-tests and the total between children of normal middle class socio-economic and cultural background and those from an inner-city socio-economic and cultural background. The data will be summarized in tabular form.

CHAPTER II

REVIEW OF LITERATURE

History

Interest in problems related to sensory perceptual malfunctions has reached a new zenith in today's educational, psychological, and neurological research. This area of research, however, has its roots in the past century.

As early as, 1801, Itard believed that the savage boy of Aveyron could be trained and adopt civilized ways if given sensory experiences. After much labor limited success was noted.²

Pereire's,³ Pestalozzi's,⁴ and Montessori's⁵ educational systems were based on the notions of interdependence of the senses and the importance of personal experiences with external stimuli of various natures.

In 1866, Seguin in, Idiocy And Its Treatment By The Physiological Method, summarized the available material of the times as follows.

1. That the senses, and each one in particular, can be submitted to physiological training by which their primordial capacities may be indefinitely intellectualized.

²N. O'Connor and Beate Hermelin, Speech and Thought in Severe Subnormality (New York: The Macmillan Company, 1963), p. 25.

³Ibid.

⁴Ibid.

⁵Ibid.

2. That one sense may be substituted for another as a means of comprehension and of intellectual culture.
3. That the physiological exercise of a sense corroborates the action, as well as verifies the acquisitions of another.
4. That our most abstract ideas are comparisons and generalizations by the mind of what we have perceived through our senses.
5. That educating the modes of perception is to prepare pabulum for the mind proper.
6. That sensations are intellectual functions performed through external apparatus as much as reasoning, imagination, etc., through more internal organs.⁶

From this point until the early 1900's sensory or perceptual problems seemed to drop into oblivion as far as educators were concerned. Renewed interest appeared in this field as a result of a dicotomy of events.

Arthur I. Gates conducted a study in 1926, to determine the role of visual perception and intelligence as related to a child's reading and spelling achievement. From this work have come others.⁷

Growing impetus of the Gestalt Movement which rationalized the act of reading by placing emphasis on visual perception of the whole, involvement of past experiences, and involvement of other sensory centers other than visual.⁸

Perception

In educational circles we often find ourselves discussing the child with perception problems. This leads us to a basic question,

⁶N. O'Connor and Beate Hermelin, op. cit., pp. 25-26.

⁷Arthur I. Gates, "A Study of the Role of Visual Perception; Intelligence, and Certain Associative Process in Reading and Spelling," Journal of Educational Psychology, XVII (October, 1926), pp. 433-445.

⁸Hunter Diack, Reading and the Psychology of Perception, (Nottingham, England:Skinner, 1960), p. 36.

"What is perception?", Strauss and Lehtinen have defined the term as follows:

Perception can be considered an activity of the mind, intermediate between sensation and thought. It is the mental process which gives particular meaning and significance to a given sensation and therefore acts as the preliminary to thinking. It is the means by which the individual organizes and comes to understand the phenomena which constantly impinge upon him.⁹

Perception develops in a graduated fashion from the simple to the complicated. These powers differ not only in their genetic aspects but also from individual to individual.¹⁰ Therefore we are justified in saying that no two people possess or obtain the same degrees of perceptual abilities and that no two children will develop their perceptual aptitudes at the same homogeneous rate.

Visual Perception

Goins defines visual perception as, "That process by which phenomena are apprehended by the mind through the medium of the eye."¹¹

Goins continues to say,

A distinction has been made between the sensory aspects of receiving the visual stimuli from the page and the transmission of appropriate nervous impulses to the brain. Two aspects of the cerebral or central process have also been distinguished, that of recognizing the visual data and that of deriving the meaning of these percepts. Visual perception as defined here involves the transmission of the impressions and their recognition.¹²

⁹Alfred Strauss and Laura Lehtinen, Psychopathology and Education of the Brain-Injured Child, (New York:Grune and Stratton, 1947), p. 28.

¹⁰Ibid., pp. 29-30.

¹¹Jean Goins, "Visual Perceptual Abilities and Early Reading Progress," Supplementary Educational Monographs #87, University of Chicago Press, (Chicago:University of Chicago Press, 1958), p. 1.

¹²Ibid., p. 2.

Vernon suggested the following steps in the acquisition of adequate visual perceptual powers:

1. The awareness of light which is followed by the vague impression of an indefinite object in the field.
2. The awareness that the visual stimulation is connected with some kind of object with an existence in the visual field.
3. As the objects become more and more complete the more relevant and important parts rise out of the field.
4. The final stage in the process is the identification and understanding of the object.¹³

Getman stating that visual perception is a learned activity following a developmental sequence, supports his thesis with Skeffington's explanation of vision.¹⁴ Skeffington explains the attainment of vision in the following manner;

1. The Anti-Gravity Processes then are all those modes of movement of self through space. These are instigated by the inherent designs for movement and steered by the 'Light seeking eyes' to serve two significant organismic purposes: 1) the exploration and manipulation of the environment, and 2) the development of a body scheme for the control and effectivity of action.
2. The Centering Process provides the awareness of me-it relationships that come from movement through space, and the child integrates his body scheme information with visual information to gain the orientations of self within the environment.
3. The Identification Process provides the refinements and integrations of the child's growing tactual, visual, and auditory patterns through the manipulation of likenesses and differences, and the applications of the phonic and graphic, labels to the contents of the world about him.
4. The Speech-Auditory Process this is the relationship that can be developed by the child between his primary experiences and his actual or visualized participation in all aspects of language.
5. This represents what Skeffington and his optometric colleagues call VISION. It is an emergent of all the underlying inter-related processes and modes of performance, and is a derivative of this complex. It is the integrated culmination of all the contributing processes represented above.¹⁵

¹³M. D. Vernon, A Further Study of Visual Perception (London, England: The Broadwater Press, Ltd., 1952), pp. 20-22.

¹⁴G. N. Getman, "The Visuomotor Complex in the Acquisition of Learning Skills," in Jerome Hellmuth (ed.) Learning Disorders, (Seattle, Washington: Seattle Seguin School, Inc., 1965), p. 50.

¹⁵Ibid., pp. 52-56.

Getman concludes by saying:

The emergent, VISION, as we now think of it, is a derivative of the entire visuomotor organization of the organism. It cannot be acquired by the child as a separate skill! It can only be achieved by the child out of his own systems and the fullest possible goal-directed use, integration, and application of these systems.¹⁶

The emergence of visual perceptual powers appears to function properly between pre-school and second grade in the normal child.

This proper function of vision is an excellent indicator of a child's school success or failure.¹⁷

In concluding, it might be said that a child slowly acquires accurate and precise visual perceptual powers. These powers are learned and develop most rapidly between the ages of five and eight. Other sensory powers should develop with vision. Since this is a learned process, a child lacking this most essential ability can be trained to procure correct visual perceptual abilities.

Visual Perception and Reading

It is a noticeable fact that a blind person cannot see. But what of the child who is suffering from other visual anomalies? Many visual problems go unnoticed because they are undetectable to the adult. Due to lack of correct terminology and experience a young child can hardly describe a vision discrepancy, which he might possess. This child is meeting failure, more than likely, in his academic career, especially in reading. Research has proven without

¹⁶G. N. Getman, op. cit., p. 57.

¹⁷Marianne Frostig, D. Lefever, and John Whittlesey, "Disturbances in Visual Perception," Journal of Educational Research, LVII (November, 1963), p. 160.

a shadow of a doubt that the acquisition of visual perceptual powers is essential for school success. The most basic of all school subjects, reading, is dependent on proper visual functioning. It might be said that vision and reading achievement are synonymous terms, at least for the beginner.

Arthur I. Gates in 1926, concluded after what appears to be the first investigation concerning reading and visual perception that the ability to perceive word forms is associated with reading ability. Findings by Gates also indicate that visual perception varies widely according to the article being perceived.¹⁸

Fendrick, working under Dr. Gates, found that the mean performance on tests of visual perception was better for average readers than for poor readers. He concludes his study by saying, "There is evidence from the nature of these findings that the perceptual factor is an entity which facilitates the segregation of potentially poor readers."¹⁹

The Chapman-Cook Speed of Reading Test and a visual perception test adapted from Sr. Mary of the Visitation's visual perception test were administered to 570 children in grades four through six by Stroud. The results showed a similar correlation as determined by Gates. It would also appear that a person with a faster rate of reading also possesses better visual perceptual faculties.²⁰

¹⁸Arthur I. Gates, op. cit., p. 442.

¹⁹Paul Fendrick, "Visual Characteristics of Poor Readers," Teachers College Contributions to Education, No. 659 (New York: Columbia University, Teachers College, 1935), p. 41.

²⁰J. B. Stroud, "Role of Visual Perception as a Factor in Rate of Reading," Journal of Educational Psychology, XXXVI (October, 1945), p. 493.

Robinson, after an intensive study of causal factors related to reading disabilities, states:

Visual perception probably involves many of the higher mental processes and consequently may be associated with intelligence, previous experience, language facility, and bodily well-being. According to this view, most of the causes of reading failure are inter-related, so that the study of one necessitates consideration of the other.²¹

Ascertaining the level of competence of visual perception of first grade children and the correlation of their perceptual abilities with reading achievement, and determining the effects that training would have on visual perception were the purposes of a study conducted by Goins in 1958.²² Her findings suggest that a group of visual perception tests have a common correlation with reading achievement in the first grade. Secondly, Goins found that visual form training does not increase reading ability.²³

Retarded, normal, and emotionally disturbed but normal readers were studied by Lachmann. The Bender Gestalt was used as a discriminating device among the three groups. Results indicated that distortions in the Bender Gestalt occurred more frequently in the retarded and emotionally disturbed group, which tends to support previous findings.²⁴

Since the sensori-motor capacities play a vital role in beginning reading, it is possible that an impairment or retardation in perceptual development may cause a marked delay in the

²¹Helen M. Robinson, Why Pupils Fail in Reading (Chicago: The University of Chicago Press, 1946), p. 224.

²²Jean Goins, op. cit., p. 2.

²³Ibid., p. 101.

²⁴Frank M. Lachmann, "Perceptual-Motor Development in Children Retarded in Reading," Journal of Consulting Psychology, XXIV (No. 5, 1960), p. 430.

development of reading without a comparable loss of general intelligence. If the reading disability persists, however, it will prevent the child from having the learning experience necessary for later mental development.²⁵

Donald Lenton made the above statement at the conclusion of his research dealing with the visual motor and perceptual problems related to disabled readers.

Fuller using 287 male subjects aged eight through fifteen concluded that readers classified as good, poor, neurologically damaged, and emotionally disturbed differed significantly in relation to perceptual abilities. The good and the poor readers tended to perceive words in the same fashion however.²⁶

Birch and Belmont after studying the auditory and visual perceptual powers of 220 children of normal intelligence and socioeconomic background, from kindergarten through eighth grade drew several conclusions. Auditory-visual perception improves with age. Its most rapid period of development appeared to be between the ages of five and seven. While reading achievement was significant with these abilities in beginning reading, intelligence appears to be a more reliable element in discriminating good and poor readers in later school years.²⁷

In 1967, Fuller and Ende concluded, after an investigation concerning the relationship of visual perception, intelligence, and

²⁵Donald A. Lenton, "Visual-Motor Capacities and Ocular Efficiency in Reading," Perceptual and Motor Skills, XV (No. 5, 1962), p. 414.

²⁶G. B. Fuller, "Perceptual Considerations in Children with a Reading Disability," Psychology in the School, I (November, 1964), p.316.

²⁷H. G. Birch and Lillian Belmont, "Auditory and Visual Integration, Intelligence, and Reading Ability in School Children," Perceptual and Motor Skills, XX (February, 1965), p. 303.

reading understanding in 374 junior high school students, that 76 per cent of reading achievement is attributable to the relation of reading achievement to visual perception, intelligence, and reading for understanding.²⁸

Rudnick obtained results similar to those of Belmont and Birch. Visual perception test scores tended to show less discrimination between third and fourth grade reading achievement. After third grade general intelligence and multi-perceptual abilities become more important predictors of one's reading ability.

The foregoing gives unlimited evidence of the part visual perception plays in the reading act. Upon examination it is noted that visual perception plays a dominant role in beginning reading and, as the reader matures and becomes more sophisticated, the magnitudinal relationship of visual perception and intelligence is noted. These two factors in combination with a wealth of experiences and other perceptual factors make for a well integrated reader.

Research: The Frostig Test of Visual Perception

One would be led to believe that abilities in visual perception, particularly at the beginning stages of reading, would enhance

G. B. Fuller and R. Ende, "Effectiveness of Visual Perception, Intelligence, and Reading Understanding in Predicting Reading Achievement in Junior High School Children," Journal of Educational Research, XL (February, 1967), p. 281.

Rudnick, and others, "Auditory and Visual Rhythm Perception and Reading Ability," Child Development, XXXVIII (June, 1967), p. 581.

a child's success in reading. Gates,³⁰ Goins,³¹ and Frostig³² have suggested that there is no general visual perception power but many different aspects of visual perception.

Frostig and her associates constructed a visual perception test on this thesis and published the results in 1961. Frostig subdivided visual perception into five areas; visual-motor coordination, figure-ground perception, perceptual constancy, position in space, and spatial relationships. Frostig felt that these five aspects of visual perception were most essential to the act of reading. Using 434 normal children from kindergarten through second grade and 71 medically diagnosed neurologically impaired she concluded that her test was a valid and reliable measure of the child's lack or attainment of visual perceptual skills.

The abnormal degree of scatter in their various subtests (neurologically impaired) suggests that distinct functions of visual perception can be disturbed independently and in varying degrees. Perceptual training should therefore be directed toward the specific functions disturbed in each case.³³

Dr. Frostig states of normal children;

Our experience indicates, therefore, that in children of average or near average intelligence, special remedial training can remedy perceptual deficiencies.³⁴

Since 1961, studies have been carried on to determine the reliability of the Frostig Developmental Test of Visual Perception

³⁰Arthur I. Gates, op. cit., pp. 436-337.

³¹Jean Goins, op. cit., p. 101.

³²Marianne Frostig, D. Lefever, and John Whittlesey, "A Developmental Test of Visual Perception for Evaluating Normal and Neurologically Handicapped Children," Perceptual and Motor Skills, XII (No.5, 1961), pp. 386-394.

³³Ibid., p. 392.

³⁴Ibid., p. 392.

when compared with reading achievement, intelligence, and other perception tests. Results have shown the Frostig Developmental Test of Visual Perception to be a favorable instrument in screening children with visual perception problems and a predictor of reading achievement.

The results of the Benveniste thesis are questionable since all of the subjects in her study did not receive the same type of intelligence test. The study dealt with the relation of visual perception, as measured by the Frostig Developmental Test of Visual Perception, and intelligence to early reading. Benveniste found that visual perception was more important than intelligence to reading readiness achievement. In first grade children both variables were of equal importance. Intelligence appears to be a more significant factor to reading success in second and third grade according to this study.³⁵

Corah and Powell did a factor analysis of the Frostig Developmental Test of Visual Perception. They suggested that the perceptual quotient (total score) is of greater importance and value than the individual scores provided by the individual sub-tests.³⁶

In her doctoral dissertation Sprague found the Frostig Developmental Test of Visual Perception total scores correlated significantly with reading achievement and teacher evaluation at the .01

Jeanette Benveniste, "The Relative Importance of Visual Perception and Intelligence to Reading Success in Kindergarten Through Third Grade," Unpublished Masters Thesis, Department of Education (Los Angeles:University of Southern California, 1962), pp. 45-46.

Norman L. Corah and Barbara J. Powell, "A Factor Analysis Study of the Frostig Developmental Test of Visual Perception," XVI Perceptual and Motor Skills, (January, 1963), p. 59.

level. The correlation between the Frostig Developmental Test of Visual Perception and the Draw A Man Test was significant. Sprague worked with 250 first grade children of normal backgrounds. This correlation might be expected because of the similarity of skills involved.³⁷

Bryan, working with children from kindergarten through third grade, concluded his study by saying that visual perception as measured by the Frostig Developmental Test of Visual Perception is a predictor of reading success. Visual perception plays a greater part in reading success at first grade level than later when intelligence gradually becomes the more dominant factor in reading achievement.³⁸

Olson has conducted two studies using the Frostig Developmental Test of Visual Perception. He concludes from his study of second grade children that, while the Frostig Developmental Test of Visual Perception tests indicate perceptual weakness, they do not pin-point specific reading difficulties.³⁹ However, Frostig never claimed that this would give specific information as to the definite reading disability of a child.

In Olson's study of third grade subjects he found several

³⁷Ruth Sprague, "Learning Difficulties of First Grade Children Diagnosed by the Frostig Visual Perception Test: A Factor Analytic Study," Unpublished Doctoral Dissertation, Department of Education (Detroit:Wayne State University, 1963), p. 33.

³⁸Quentin R. Bryan, "Relative Importance of Intelligence and Visual Perception in Predicting Reading Achievement," California Journal of Educational Research, XV (January, 1964), pp. 47-48.

³⁹V. Olson, "Frostig Developmental Test of Visual Perception as a Predictor of Specific Reading Abilities with Second Grade Children," Elementary English, XXXXIII (December, 1966), p. 896.

interesting facts. The Frostig Developmental Test of Visual Perception was a better predictor for the girls than the boys in this particular case. The total score was a fair predictor of school achievement and reading ability. Thirdly a moderate degree of correlation was found between visual perception difficulties and specific reading disabilities.⁴⁰

Reading and the Inner-City Child

If experiential background is an important factor in reading readiness and adjustment, it seems apparent that the child from the inner-city may suffer from this deficiency. The author does not mean to imply that this child does not have an experiential background upon which to draw but this child's experiences are not of the variety, quality, and quantity required to comprehend the material in most of the existing reading programs. Present programs are geared to the middle class, suburban child. If development of the sensori-perceptual complex, of which visual perception is apart, also depends on a wealth and variety of experiences the child from the inner core is faced with special problems.

Bereiter and Engelmann make the following comment concerning reading and the disadvantaged child;

If a child fails in reading during the primary grades, his chances for success in any other academic area are reduced. It is therefore essential that a preschool program for disadvantaged children do all it can to ensure that the children will succeed in reading when they enter school.⁴¹

⁴⁰A. V. Olson, "School Achievement, Reading Ability, and Specific Visual Perception Skills in the Third Grade," Reading Teacher, XIX (April, 1966), p. 492.

⁴¹Carl Bereiter and Siegfried Engelmann, Teaching Disadvantaged Children in the Preschool, (Englewood Cliffs, New Jersey:Prentice-Hall Inc., 1966), p. 273.

For the above reason Bereiter and Engelmann developed a readiness program which stressed the importance of the word as a basic unit in the reading act and a basic traditional orthography.⁴²

More pertinent to the present study is the recent research conducted by Deutsch and Katz, who are authorities in the field of the deprived child.

Katz concluded in 1967, after working with 72 normal and retarded readers of lower socio-economic background that performance in discrimination was influenced by many factors; however poor readers had greater difficulty in discriminating various stimuli.⁴³

Deutsch and Katz worked in collaboration on a study dealing with the auditory and visual functions of 168 Negro children.

The major finding was that retarded readers differed from normal readers on all perceptual measures obtained. On a reaction-time task, the poor readers exhibited longer latencies in shifting from one sensory modality to another than did good readers. In their monitoring of stimuli, the poor readers had greater difficulty inhibiting responses to inappropriate stimuli. Their ability to differentiate between similar auditory and visual stimuli was decidedly inferior to their normal reader counterparts. Furthermore, the poor readers recalled and retained sequentially presented material less efficiently than the more skillful readers.⁴⁴

Here, as in previous studies reviewed, it is noted that poorer readers have limited visual perceptual powers. Yet, no one within

⁴²Carl Bereiter and Siegfried Engelmann, op. cit., p. 274.

⁴³Phyllis A. Katz, "Verbal Discrimination Performance of Disadvantaged Children: Subject and Stimulus Variables," Child Development, XXXVIII (March, 1967), p. 239.

⁴⁴Phyllis A. Katz and Martin Deutsch, "The Relationship of Auditory and Visual Functioning to Reading Achievement in Disadvantaged Children," (ed.) Martin Deutsch and Associates. The Disadvantaged Child, (New York: Basic Books, Inc., 1967), p. 225.

the field of the writer's survey of literature, has equated two groups of children of different backgrounds to see if there is a difference in the visual perceptual powers of either group.

CHAPTER III

PROCEDURE

Purpose of the Study

The objective of the present study was to determine if there were any significant visual perceptual differences, as measured by the Frostig Developmental Test of Visual Perception, between second grade children of two different cultural and socio-economic backgrounds. Intelligence and age were controlled variables.

The null hypothesis for this study was: Different socio-economic and cultural backgrounds of second grade children do not affect their visual perceptual abilities.

Selection of Students

The second grade children of a Catholic parochial inner-city and of a suburban school of the Milwaukee area were the subjects for the study, comprising a total of 129 second grade children. The population of the inner-city school consisted of Negroid, Caucasian, and Spanish children. The suburban school population was all Caucasian. The fathers of the inner-city children were mainly blue collar workers, several were unemployed, and several were professionals. The fathers of the suburban children were mainly in professional and management positions.

Only children whose intelligence quotients ranged from 95 to 105 inclusive and mental ages ranged from seven years, six months

to eight years, six months inclusive were accepted in the study. This was done to control the variables of intelligence and age.

Twenty-three pupils from the inner-city school and twenty-one pupils from the suburban school met these criteria and were therefore accepted in the study.

Testing Procedures

The California Short Form Test of Mental Maturity, 1963 Revision, Level I, was administered by the author in April of 1968 to all second grade children present. A graduate student acted as a proctor during the administration of the test to the four groups of children, two for each group.

Those subjects, whose intelligence quotients ranged from 95 to 105 and whose chronological ages ranged from 7-6 to 8-6, were then given the Frostig Developmental Test of Visual Perception. Twenty-one children from the suburban school (seven boys and fourteen girls) and twenty-three from the urban school (thirteen boys and ten girls) met the above criteria. However on the day of testing one child was absent from the urban group so only twenty-two children were tested in this school. In all forty-three children were tested (twenty boys and twenty-three girls). It was also noted that seven children from the inner-city school wrote with their left hand while only one child in the suburban school wrote with the left hand. This could have resulted from training or social culture background, but was not checked.

The Frostig Developmental Test of Visual Perception was administered by the author the week following the administration of the intelligence test. At the inner-city school the test was given in

three groups of seven or eight each. At the suburban school the test was given in three groups of seven each. A fellow graduate student was present during the administration of this test to aid the author. All tests were scored by the author.

Treatment of the Data and Results

Following the administration of the Frostig Developmental Test of Visual Perception, the t-test was used to determine the significance of the difference between the mean of the two groups on the five sub-tests and the total perceptual quotient obtained from the Frostig Developmental Test of Visual Perception.

CHAPTER IV

PRESENTATION AND INTERPRETATION OF RESULTS

This research was done in order to ascertain the relationship between the visual perceptual abilities of two groups of children who differed in cultural and socio-economic background. A total of forty-three children participated in the final testing. The California Test of Mental Maturity was used as a screening device. The Frostig Developmental Test of Visual Perception was administered to the forty-three subjects following the elimination of all children not within the established range of mental ability and chronological age.

Table I contains the comparison of the results of the Frostig Developmental Test of Visual Perception and the statistical tests to determine the significance of the difference between the means of the two groups. A difference of 1.52 between the means of the two groups in favor of the suburban children was found in sub-test I Eye-Motor Coordination. This difference was found to be significant at the .05 level of confidence as indicated by the t-ratio of 2.41. Also, a mean difference of 1.18 on sub-test III Constancy of Shape in favor of the suburban subjects was significant at the .01 level of confidence. These results show suburban children's tests results to be significantly different to inner-city children's in these two areas of visual perception.

Sub-tests II Figure Ground, IV Position in Space, and V Spatial Relationships showed no significant difference between the means of the

TABLE I
 COMPARISON OF THE RESULTS OF THE FROSTIG DEVELOPMENTAL
OF VISUAL PERCEPTION OF TWO GROUPS OF CHILDREN

Tests	Mean		SD		SE _M		Diff.	SE _D	t-ratio	Level of Conf.
	Subur- ban	Inner city	Subur- ban	Inner city	Subur- ban	Inner city				
Eye-motor coordination	11.33	9.81	1.68	2.40	.37	.52	1.52	.63	2.41	.05
Figure ground	9.00	8.68	1.51	1.74	.33	.37	.32	.49	.64	NS
Constancy of shape	9.33	8.18	1.34	2.20	.29	.25	1.18	.40	2.95	.01
Position in space	9.85	9.54	1.63	1.77	.36	.38	.31	.61	.50	NS
Spatial relationship	9.90	10.04	.75	1.29	.16	.28	.14	.31	.45	NS
Total	100.71	93.36	10.42	16.70	2.33	3.62	7.35	4.30	1.70	NS

urban and suburban children. Which would indicate that these areas of visual perception are fairly well developed in both groups by the end of second grade for these particular groups of children. The difference of the means of the Total Perceptual Quotient did not reach the appropriate level of confidence to be accepted. The inner-city children tend to have a greater scatter of scores as indicated by the standard deviations.

Summarizing the results we might say that there is a definite difference in the mean scores of the two groups on sub-tests I Eye-Motor Coordination and III Constancy of Shape, as measured by the Frostig Developmental Test of Visual Perception. Tests results of sub-tests II Figure Ground, IV Position in Space, V Spatial Relationships, and the Total Perceptual Quotient, showed no significant differences in mean scores for these particular groups. The Frostig Developmental Test of Visual Perception does not seem to bring out significant differences between children of low and high socio-economic backgrounds. This may indicate that within the limitations of this study and for the children of these particular schools, there are no significantly different perceptual growth patterns, or that these children have overcome this gap in their perceptual powers by second grade. These results tend to support those of Benveniste, Bryan, and Olson who suggest that the Frostig Developmental Test of Visual Perception is a more accurate predictor of perceptual abilities at the first grade level.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

This research study was undertaken in order to compare the performance on the Frostig Developmental Test of Visual Perception of two groups of second grade children; one of disadvantaged cultural and socio-economic background; the other, of normal background. It seemed possible that the inner-city children, due to lack of visual stimulation in early childhood and lack of experiences which would enhance visual perception powers, might not have shown similar degrees of visual perceptual development during the early primary grades as suburban children. The specific objectives were: 1) To determine if the children from the two different cultural and socio-economic backgrounds differ significantly on any specific aspect tested on the Frostig Developmental Test of Visual Perception, and 2) To determine if there are perhaps other factors which effect visual perceptual abilities much more than intelligence.

The California Short Form Test of Mental Maturity, was used as a screening device and administered to 125 second grade children to eliminate children of low or very bright intelligence. Those who met the following criteria: Intelligent quotient range of 95 to 105 and chronological age range of seven years, six months to eight years, six months, were given the Frostig Developmental Test of Visual Per-

ception. Twenty-one children met this criteria from the suburban school and twenty-three from the urban school. The test was administered in small groups by the author.

Statistical procedures were applied to the data in order to determine the significance of the difference between the means of the two groups on each sub-test and the total perceptual quotient.

Findings

Analysis of the data obtained indicates the following:

1. There was a significant difference between the mean performances of suburban and inner-city children on tests of eye-motor coordination and constancy of shape perception in favor of the suburban children.

2. There was no significant difference between the means obtained by suburban and inner-city children on tests of figure ground perception, position in space perception, and spatial relationship perception. While suburban children performed slightly higher on tests of figure ground and position in space perception, the inner-city children did slightly better in the test of spatial relationship perception.

3. The difference between the means of the two groups on the total perceptual quotient was not significant at the .05 level of confidence but nearly reached this level of confidence.

Conclusions

It would appear that the second grade children participating in this experimental study, of two different cultural and socio-economic backgrounds, of the same range of intelligence, and of the same

chronological age range, have attained a similar degree of development in visual perceptual abilities on three of the sub-tests of the Frostig Developmental Test of Visual Perception. On sub-tests dealing with eye-hand coordination and constancy of shape perception, a significant difference was noted, which favored the suburban children. Possibly the teaching method and curriculum of the suburban school has encouraged a greater development of these skills. Lack of visual stimulation, lack of experience with types of shapes of a visual, kinesthetic, and tactual nature, lack of experiences which develop the fine motor control needed in eye-hand coordination, and lack of language understanding of spatial differences might account for these significant differences. In any event the implications of the above should be studied to determine which are the most important factors in the development of these two areas of visual perception.

Further Research

Problems which might evolve from this study and may be worthy of further attention are:

1. A similar study involving a much larger sampling and objective measures of socio-economic background.
2. A longitudinal comparative study of children in low socio-economic and children of high socio-economic backgrounds to study initial differences at pre-school and at each grade level through the primary grades to note growth patterns of the two groups. This study should also involve intelligence to determine whether intelligence or other factors such as; socio-economic background, instructional factors, natural maturation, combination of factors have decided influence in perceptual development.

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