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# Visual perception: its relation to beginning reading

Agnes Lero

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**VISUAL PERCEPTION:  
ITS RELATION TO BEGINNING READING**

by  
**Sister Agnes Lero C.S.J.**

**RESEARCH PAPER  
SUBMITTED IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
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Sister Marie Colette  
Adviser

Date

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## CHAPTER I

### THE PROBLEM

#### Introduction

Perception itself as defined by Vernon is the combination and integration of sensation from the different sense organs.<sup>1</sup> All the senses--sight, touch, hearing, smell, and taste--are used in developing concepts and in communication itself. In and through the use of these sense organs, psychologists such as Piaget tell us, the child is actually developing his intelligence and reasoning powers.<sup>2</sup> In making an association of a given stimulus with previously perceived stimuli of a related nature, the child creates the atmosphere in which generalizations, conceptualizations, and powers of abstract thinking are developed. Thus to truly educate a child one must ascertain his level of maturation, supplement experiences if necessary, and only then begin formal education. Some experts estimate that from three to eight percent of school children suffer from perceptual

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<sup>1</sup>M. D. Vernon, A Further Study of Visual Perception (Cambridge: The University Press, 1954), 14.

<sup>2</sup>Jean Piaget, The Origins of Intelligence in Children, trans. by Margaret Cook (New York: International University Press, Inc., 1952), 60.

handicaps.<sup>1</sup> Other authorities dealing with dyslexia raise this to as high as twenty-five percent. Regardless of the established number, the fact remains that often educators fail to recognize that perceptual limitations may hinder the reading success of apparently normal pupils.<sup>2</sup>

Developmental psychologists have shown that a child slowly acquires accurate and precise visual perceptual powers. These powers are learned and developed 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 in correct visual-perceptual abilities.

Reading, as stressed by Smith and Dechant, is a perceptual rather than merely a sensory process and, as such, it includes more than mere recognition of words.<sup>3</sup> This involvement of the nervous system thus demands the total response of the child. However, the ability to read must depend in the first place on reasonably accurate perception of the printed words and letters from which they are formed.<sup>4</sup>

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<sup>1</sup>"Perceptually Handicapped," Reading Newsreport, III, No. 5 (March, 1969), 43.

<sup>2</sup>George Spache, Reading in the Elementary School (Boston: Allyn and Bacon, Inc., 1964), 41.

<sup>3</sup>Henry P. Smith and Emerald B. Dechant, Psychology in Teaching Reading (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1961), 20.

<sup>4</sup>M. D. Vernon, "Major Approaches to Word Perception," Education, XVIII (April, 1966), 512.



Supportive research done by Frostig, Lefever, and Whittlesey showed that proper function of vision is an excellent indicator of a child's school success or failure.<sup>1</sup>

#### Statement of Problem

In the light of these facts it was the purpose of this paper to focus on the basic learning skills of perception as they develop in the young child and the relation of these skills to a successful start in reading. Although the writer's prime interest is in visual perception as needed in the primary grades, much of the literature dealing with visual perception treats of the early development and maturational levels of visual perception. In conjunction with this review of literature the author evaluated group tests of visual perception for beginning readers.

#### Limitations

This paper was limited to examination of visual perception in normal children beginning formal training in education, and group evaluation of visual perception. The author did not attempt to discuss implications for the severely brain-damaged child or the dyslexic child.

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<sup>1</sup>Marianne Frostig, D. Lefever, and John Whittlesey, "Disturbance in Visual Perception," Journal of Educational Research, LVII (November, 1963), 160.

### Significance

It was hoped that the content of this paper would provide the reader with an overview of the nature of visual perception needed for beginning reading, as well as some necessary guides to evaluation of visual-perceptual handicaps.

### Definition of Terms

1. Assimilation--"interaction with the environment which enables the child to fit every new experience into his preexisting mental structure."<sup>1</sup>
2. Accommodation--"the perceptual modification of mental structures to meet the requirements of each particular experience."<sup>2</sup>
3. Mental activity--"the process of adaptation to the environment."<sup>3</sup>
4. Mid-plane of the body--"the central line of the body which to cross over requires the transfer of action from one side of the body and corresponding sphere of the brain to the other side."<sup>4</sup>
5. Transpositions--"the grasping of spatial and temporal

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<sup>1</sup>Irving Adler, "Mental Growth and the Art of Teaching," The Mathematics Teacher, LIX (December, 1966), 706.

<sup>2</sup>Ibid., 708.

<sup>3</sup>Newell C. Kephart, The Slow Learner in the Classroom (Columbus, Ohio: Charles E. Merrill Books, Inc., 1960), 24.

<sup>4</sup>Ibid., 34.

relationships so as to react to objects that are too distant to be included within immediate grasp."<sup>1</sup>

#### Summary

In the past ten years of teaching the author continually found pupils with average and above-average intelligence who demonstrated difficulty with initial reading. An introduction to Piaget's theory of the development of the intellect made the writer of this paper aware of the fact that each sensory stimulus received in early life actually creates for the child the environment in which the ability to reason abstractly is formed. From this knowledge stemmed the related fact that to prevent early failure in reading, the educator must be alert to the fact that maturation may be incomplete, necessitating the actual teaching of the perceptual act to the child. Interest in research in the area of visual perception was thus created and brought to focus in the present paper.

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<sup>1</sup>Gloria F. Wolinsky, "Piaget's Theory of Perception: Insights for Educational Practices with Children Who Have Perceptual Difficulties," Training School Bulletin, LXII (May, 1965), 16.

## CHAPTER II

### REVIEW OF LITERATURE

#### Perception

Modern concepts of vision are quite different from the concepts of twenty or thirty years ago. Formerly the concern was primarily with the keenness of vision and the use of both eyes in the act of seeing. Such questions as "Does the child see clearly at distances?", "Does he need glasses?", "Does he use both eyes together?" were asked. As important as these questions may be, they give only a small sector of knowledge needed to determine the child's visual efficiency. Today the question is "Do the child's visual and perceptual processes operate effectively so that meaning can be obtained from the printed page?"<sup>1</sup> This question is an approach to visual perception; thus the author began this study by defining perception in the broad sense.

Wolinsky defines perception as "the knowledge of objects, as of movement, which is acquired by direct or

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<sup>1</sup>Alfred A. Rosenbloom, "A Critical Evaluation of Visual Diagnostic Materials," Remedial Reading: An Anthology of Sources, ed. by Leo M. Schell and Paul C. Burns (Boston: Allyn and Bacon, Inc., 1968), 122.

immediate contact with the object."<sup>1</sup> Hildreth describes it as "the mind's response to sensation received from the outside world."<sup>2</sup> Without this capacity to perceive, the human mind would be unable to form associations with symbols and their meaning, to store up memories of word forms, or to discover similarities and differences in word forms, a skill that is fundamental in reading and in learning to read. In reading, the visual and auditory perception of word forms must operate smoothly, swiftly and simultaneously. Because of the orientation and sequence factors, words and letters must be seen, not only as variations in shape, but also as systematized variations in a perceptual structure. The symbols on a page must exist not only as characters which can be recognized individually, but must also exist in a structure of spatial relations whereby the individual letters combine to form a given word. This relationship between letters and words must be preserved at all times. To paraphrase, the words on the page must exist not only as symbols but also as elements in a concrete environment. Such ordering of the page of print is dependent upon the child's

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<sup>1</sup>Gloria F. Wolinsky, "Piaget's Theory of Perception: Insights for Educational Practices with Children Who Have Perceptual Difficulties," Training School Bulletin, LXII (May, 1965), 13.

<sup>2</sup>Gertrude Hildreth, "Some Principles of Learning Applied to Reading," Remedial Reading: An Anthology of Sources, ed. by Leo M. Schell and Paul C. Burns (Boston: Allyn and Bacon, Inc., 1968), 203.

ability to structure the environment around him.<sup>1</sup> "The ability to deal with symbolic and conceptual materials is based upon consistent and veridical perception of the environment."<sup>2</sup> Thus the way a child looks at and listens to the world affects how he learns.

The child between the ages of two and five years must have many experiences with objects before he can move to the more abstract world of pictures, words and other symbols he will encounter in formal education. Through action and speech the child must assimilate such operations or active experiences with objects.<sup>3</sup>

It is possible, however, to have experiences which yield very little in terms of a significant body of meaning or concepts. Mere sensory contact is rarely enough. Rather, this contact must be accompanied by a kind of directed perception which will be consummated in the formation of meaningful concepts.<sup>4</sup> Perception is, above all else, an orderly process. It is a process in which "organization and pattern prevail over multitudinousness, variability, and incompleteness in the

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<sup>1</sup>N. C. Kephart, "Perceptual-motor Aspects of Reading," Reading and Inquiry, ed. by J. A. Figurel (Newark, Delaware: International Reading Association, 1965), 363.

<sup>2</sup>N. C. Kephart, "Perceptual-motor Aspects of Learning Disabilities," Reading Instruction: Dimensions and Issues, ed. by William Durr (Boston: Houghton Mifflin Co., 1967), 263.

<sup>3</sup>"Kaleidoscope for Early Learning," Reading News-report, III (April, 1969), 25.

<sup>4</sup>Thomas J. Edwards, "Language-experience Attack on Cultural Deprivation," Remedial Reading: An Anthology of Sources, ed. by Leo M. Schell and Paul C. Burns (Boston: Allyn and Bacon, Inc., 1968), 279.

stimuli that register on the sense organs."<sup>1</sup> Smith and Dechant state that perception is and must be a cumulative process. It is through perception that the graphic symbol achieves meaning.<sup>2</sup>

### Visual Perception

Stimulus alone does not make perception. Stimulus in itself has no direct power by which to bring about a person's perceptual response. An impulse transmitted from the eyes to the brain does not itself provide the representation of which the perceiving individual is aware. Present-day research indicates that man perceives his environment in terms of his own individual habits of perceiving. Baller and Charles thus state that "what a person perceives may not fully agree with objective realities, but he invests his observation with its meaning. He is the active organizer of the features which the observed phenomena have for him."<sup>3</sup> In each individual there exists the tendency to structure a pattern of relationships in any given stimulus situation. This stimulus situation is referred to by psychologists as the perceptual field.

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<sup>1</sup>Warren R. Baller and Don C. Charles, The Psychology of Human Growth and Development (New York: Holt, Rinehart and Winston, 1961), 108.

<sup>2</sup>Henry P. Smith and Emerald V. Dechant, Psychology of Teaching Reading (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1961), 28.

<sup>3</sup>Baller and Charles, The Psychology of Human Growth and Development, 108.

Within a perceptual field there is

a figure and ground, the former being that aspect of the stimulus situation which for the individual is predominant and the latter being the perceptual background, the less-differentiated parts of the stimulus field.<sup>1</sup>

In regard to development of visual discrimination Betts points out two important implications which would serve to summarize what has been said thus far.

First, the child must have a sufficient background of experiences pertinent to a given selection to insure adequate working concepts. A part of the process of perception is the association of meaning with previous experiences. Second, the child must have had considerable experiences in making visual discriminations. When these experiences are lacking the child may be conspicuously slow in analyzing details and reacting discriminately to small or subtle differences among word forms.<sup>2</sup>

These factors then tend to differentiate the bright child from the slow learner. In recent years intelligence is coming to be viewed as the problem-solving capacity. This capacity is based on a hierarchical organization of symbolic representation on the one hand and information-possessing strategies on the other--both deriving to a considerable degree from past experiences. The interaction between an individual and his environment results in continually reorganizing the structures of the mind.<sup>3</sup>

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<sup>1</sup>Ibid., 111.

<sup>2</sup>Emmett A. Betts, Foundations of Reading Instruction (New York: American Book Co., 1957), 335.

<sup>3</sup>Russell G. Stauffer, "Reading and Cognition," Reading and the Cognitive Processes, ed. by James F. Kerfoot (Newark, Dela.: International Reading Association, 1967), 8.



Perceptual activities, by their very nature, cause the child's brain to organize the sensations he gathers in the course of his explorations and experiences into some type of generalization or category. This ability to perceive, like the ability to think, must undergo development with age. It remains true that "the order of progression in the four major categories of mental growth is fixed but rate of progress is not."<sup>1</sup> This cognitive development, or mental growth, depends on sensorimotor achievement, which in turn depends on the child's perceptual abilities and his capabilities to respond. The child's first interactions with his environment are motor. His first learning is motor learning. His first attempt to organize the environment is based upon these motor interactions. For a large number of children, learning difficulty begins at this early motor stage. They learn to use motor responses to accomplish certain ends, but fail to expand or generalize these motor responses so that they form the basis of information-gathering.<sup>2</sup>

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<sup>1</sup>Irving Adler, "Mental Growth and the Art of Teaching," The Mathematics Teacher, LIX (December, 1966), 706.

<sup>2</sup>M. D. Vernon, "Major Approaches to Word Perception," Reading Instruction: Dimensions and Issues, ed. by William Durr (Boston: Houghton Mifflin Company, 1967), 260.

Stages of Visual-Perceptual Development

Sensory-Motor

In the sensory-motor period the child responds in a direct motor fashion to the immediacies in his environment. Each new situation has its own perceptual organization of stimuli, different from the previous one. The child then must learn to accommodate the visual stimulus-reaction to the fulfillment of a given need or reaction at a given moment.

First sensory-motor period

According to Piaget,

the first of the six sensory-motor periods begins with birth and extends up to one month. During this stage the inherent reflex activities, such as sucking, crying and vocalization, movement of head, arms, and trunk are produced.<sup>1</sup>

At this time,

when a person appears at the child's crib, only a global image, which appears, moves, and disappears, irregardless of extrinsic meaning, is perceived. Only the need to see is fulfilled. Later the child is capable of following with a glance the path of the moving object, thus co-ordinating movement with seeing. Still later, the various accommodations to distance, prominence, et cetera enrich visual perception, for now, the object looked at serves a multiple purpose. The visual images acquire meaning connected with hearing, grasping, touching; in short, with all sensory-motor activity. Thus it is that every individual enters upon the life-long process of "structuring" his world. This is inescapably a part of his life...observing and identifying objects and happenings.<sup>2</sup>

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<sup>1</sup>Wolinsky, "Piaget's Theory of Perception," 14.

<sup>2</sup>Baller and Charles, The Psychology of Human Growth and Development, 100.

Perception is an amazingly complex process involving considerably more than the fact that there are "things to see and eyes with which to see them." Some individuals quite obviously perceive more than others; some see if not more at least very differently; some see and enjoy where others in the self-same surroundings are little impressed by what their senses report. Improved knowledge of the perceptual process is clearly a high-priority requirement for teachers if they are to deal successfully with children and youth.

#### Second sensory-motor period

The second stage (one to four months) is described by Wolinsky as

the period of the first acquired adaptation and the primary circular reaction, i.e., when the child sucks his thumb as a result of a hand-mouth coordination rather than the chance encounter between the two.<sup>1</sup>

Piaget himself defines circular reaction as "the acquired functional exercises which prolong the reflex exercise and has the effect of fortifying and maintaining the function for its own sake."<sup>2</sup> This circular reaction of itself then, necessitates the involvement of accommodation and assimilation.

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<sup>1</sup>Wolinsky, "Piaget's Theory of Perception," 15.

<sup>2</sup>Jean Piaget, The Origins of Intelligence in Children, trans. by Margaret Cook (New York: International University Press, Inc., 1952), 66.

Accommodations, as such, deal with the adjustment of the eye to such things as pupillary reflex, to distance, and binocular convergence. The activity used in accommodation is reflex and part of the eye movement as such. But as in all cases of learning, "perfect practice makes perfect." Thus it is that only in exerting himself to perceive forms, prominence, depth in measuring distances, in seeing things in perspective, in short, in making his accommodation reflexes function with respect to things, will a child arrive at correct handling of the eyes.

Along with the ability to accommodate visual perception of an object in the environment in relation to his own position (depth perception), the child must also be capable of assimilation. Assimilation, in its first stage, is viewing or perceiving an object merely as an image on which to focus attention, regardless of any meaning.

Piaget states that

in order for the individual to depart from this functional stage of assimilation, he must pass through three successive stages: generalizing assimilation, recognition of assimilation, and the co-ordination of the schemata of visual assimilation with other schemata of mental assimilation.<sup>1</sup>

Thus, the practice of looking for looking's sake now brings with it generalization of the actions repeatedly viewed.

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<sup>1</sup>Piaget, The Origins of Intelligence in Children, 75.

Third sensory-motor period

The child now enters into the third stage (four to eight months) which is termed "second circular reaction, in which the child tends to make interesting sights last."<sup>1</sup> The child now uses the previous levels already passed through to receive stimuli, accommodate, assimilate, and generalize objects in a global category. At this stage the actual construction of reality is possible. "The actuality of an object's existence outside the viewer is demonstrated in his ability to search for objects which have vanished from his immediate perception or viewing of it."<sup>2</sup> An example of recognition occurs when the child is capable of perceiving an object to the extent of forming an image, distinct from other images, and seeing becomes more than the simple exercise in which the image is viewed, regardless of interest in the given object. Now interest is shown in the object perceived, for it can be recognized from one appearance to its later reappearance. Gesell states that

eyes and hands gain command of the midplane at about twenty weeks of age. At twenty-four weeks, the infant grasps an object with hand as well as with his two eyes. Eyes, head and hands are now in versatile coordination. But the eyes lead in taking hold of the physical world.<sup>3</sup>

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<sup>1</sup>L. N. Gould, "Visual Perception Training: Visual-Motor-Perception Program," Elementary School Journal, LXVII (April, 1967), 384.

<sup>2</sup>J. McV. Hunt, Intelligence and Experience (New York: The Ronald Press Company, 1961), 129.

<sup>3</sup>Arnold Gesell, Frances L. Ilg, and Glenna E. Bullis, Vision: Its Development in Infant & Child (Boston: Paul B. Hoeber, Inc., Medical Book Dept. of Harper & Bros., 1949), 13.

### Fourth sensory-motor period

From this level, the child now advances to the fourth stage (eight to twelve months).<sup>1</sup> At this stage or period the richer meaning now possible through visual images makes visual assimilation no longer an end in itself but an instrument for a far greater assimilation. He now uses the process of looking to recognize the stimulus in order to act later upon known information in an attempt to discover. This action of discovering, for example, a toy seen and then hidden, is the first attempt at problem-solving. By the manipulation of things and of his body in relation to things, he is perfecting the sensory-motor process and is learning to match sensory data to motor data. He is building up an adaptive perceptual-motor process which will allow him to fit his behavior to the varied demands of the situation in which he will later find himself.<sup>2</sup> In Piaget's terms, "the application of known means to new situations constitutes mental activity."<sup>3</sup>

Space, causality and time begin to have objectivity. An interest in the new and novel begins, which as Hunt states,

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<sup>1</sup>Wolinsky, "Piaget's Theory of Perception," 15.

<sup>2</sup>Newell C. Kephart, The Slow Learner in the Classroom (Columbus, Ohio: Charles E. Merrill Books, Inc., 1960), 13.

<sup>3</sup>Jean Piaget, The Psychology of Intelligence (Paterson, N.J.: Littlefield, Adams and Co., 1960), 61.

motivates imitation of unfamiliar models, and new achievements are assimilated in playful repetitions. Also at this point the initiative accommodation becomes differentiated from playful assimilation, and the later combination of the two processes leads to the development of images symbolizing concrete actions.<sup>1</sup>

The child needs to try out all the possible muscular responses of which his body is capable in order to find out what his body and its parts can do. Discovery of muscular response necessitates

a child's observation on how he can obtain sensory data concerning things and how these sensory data vary with his own position relative to the thing. He must learn to make a sensory impression the basis for an appropriate motor response which will change his relation toward a thing in the direction in which he wishes it to change. Finally he must observe the relationship between thing and how things operate together.<sup>2</sup>

#### Fifth sensory-motor period

The transition from stage four into five (twelve to eighteen months) now appears. The fifth stage or period is the "time of tertiary circular reaction and the discovery of new means through active experimentation."<sup>3</sup> At this point objects become permanent, and spatial, causal, and temporal sequences are responded to with even more objectivity. The actual transition from previous stages is but a gradual continuation of the trends toward greater autonomy and spontaneity in the child as he assimilates more and more objects.

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<sup>1</sup>Hunt, Intelligence and Experience, 145.

<sup>2</sup>Kephart, The Slow Learner, 13.

<sup>3</sup>Wolinsky, "Piaget's Theory of Perception," 16.

Kephart presents this theory of accommodations of objects when he states that

the objects viewed by the child must be integrated with his past experiences, thereby finding a basis on which to generalize connection with the present field of knowledge and past knowledge already experienced. From this integration and accommodation of knowledge the child is capable of an output or response to new knowledge in the form of a muscular response.<sup>1</sup>

An active curiosity is aroused by the child's environment wherein he will continue to search for new meaning and to explore the unfamiliar. This exploration brings the child to the threshold of the sixth and final sensory-motor period.

#### Sixth sensory-motor period

At this point the child is, as Wolinsky states, capable of representing certain activities rather than a simple performance. Here the child has arrived at the ability to receive and to react to objects in a conceptual-symbolic manner rather than a purely sensory-motor behavior.<sup>2</sup>

Having thus far traced Piaget's development of perception to this threshold, it is now possible to see how perceptual activities lead to comparisons, transpositions, anticipations, and in general, an analysis that becomes more and more mobile.<sup>3</sup> Perceptual ability would, by nature, increase with age, giving the child sufficient ability to perceive in a universal manner or else by accumulating disconnected details into a universal. The part-whole

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<sup>1</sup>Kephart, The Slow Learner, 56.

<sup>2</sup>Wolinsky, "Piaget's Theory of Perception," 18.

<sup>3</sup>Piaget, The Psychology of Intelligence, 85.



problem is therefore seen to be a function of the interplay between past experience and immediate impingement from sensory sources.<sup>1</sup> The child is required to respond to many elements of a stimulus at once and to the relationships between these elements. He must respond in terms of a total stimulus field rather than an isolated element in that field. An example of this would be the child who sees his father shaving and does not recognize him because of the lather on his face. The child failed to identify the stimulus as a whole in an organized stimulus field and to adapt his behavior to the totality of the relationships involved.<sup>2</sup> This ability to reverse known information actually takes the individual into the second developmental stage.

#### Preoperational

Now, having completed the first phase (sensory-motor stage) of the four major phases in perceptual growth, the child launches into the second phase, preoperational (eighteen months to six or seven years). During this stage the child begins to use symbols, which are at first private, for only he can interpret them. This then lends itself to actual speech and the socially standardized symbols of spoken language.

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<sup>1</sup>Ross L. Mooney, "The Perceptive Process in Reading," Reading Teacher, XIII (October, 1959), 36.

<sup>2</sup>Kephart, The Slow Learner, 7.

In this preoperational phase the child is not aware of the reversibility of many transformations. His thinking is dominated by his momentary perception. Hence, he tends to associate things with each other by accidents of juxtaposition rather than by any relation of cause and effect or logical order. As a result he has a poor grasp of the relation between part and whole. It is at this stage that the various images are properly developed. These images fall into four general categories:

1. Reproductive images: reproduces representation of situations which have preceded. (rote memory)
2. Anticipatory images: imagining the results of a transformation as yet unknown, but which could be predicted on the basis of some reasoning. (problem-solving)
3. Figurative function: static configuration, independent of transformation. (a mirroring or reproduction of the stimulus)
4. Operative function: actions which transform objects in one way or another, including interior organization of actions which have become reversible and are coordinated with other operations in a structure. (differentiation of two or three simple objects)<sup>1</sup>

Symbolic functioning is characterized by a cognitive form or representational thought that is far more encompassing than perceptual or imagery. Through representational thought Stauffer states that we

can recall the past, represent the present, and anticipate the future in one brief and mobile act; it can reflect on, mediate, or contemplate a course of action; it can extend its scope to the past, to

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<sup>1</sup>J. Kaswan, and others, "Variables in Perceptual and Cognitive Organization and Differentiation," Journal of Personality, XXXIII (June, 1965), 153.

the future, and to the intangible; and it becomes socialized as a whole culture shares in a system of codified symbols.<sup>1</sup>

### Concrete Operational

The third phase of mental growth consists of the concrete operations which span the period from seven to eleven years of age. In this phase "the child uses all the preceding stages of perception, except integration. The mental activity culminates in reversibility."<sup>2</sup> As the child progresses through the concrete operation period his cognitive behavior springs from a more coherent and inter-coordinated system of actions called logical groupings."<sup>3</sup> At this time a major transition occurs. Instead of observation directing his thought, his thought directs his observation. This ability to reverse knowledge from the known or perceived into the unknown or unseen is the first attempt at reasoning.

### Formal Operational

With the ability to reason the child arrives at the final major phase of mental development, formal operation. The stage stretches from age eleven or twelve into adult reasoning.<sup>4</sup> It is in this stage that the individual can

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<sup>1</sup>Stauffer, Reading and the Cognitive Processes, 9.

<sup>2</sup>Gould, "Visual Perception Training," 385.

<sup>3</sup>Stauffer, Reading and the Cognitive Processes, 9.

<sup>4</sup>Gould, "Visual Perception Training," 385.

identify all the possible factors that are relevant to a program under investigation and form all possible combinations of these factors. These factors would include formulating hypotheses, drawing conclusions from them, and trying them against reality.

This ability to interact with one's environment is "the child's actual learned background of experiences which are a necessary component of learning."<sup>1</sup> Yet a teacher must never take for granted that this has, in all areas, been mastered by all children.

Many children appear to have adequate sensory efficiency for reading, and their intelligence, language ability, and experience background compare favorably with those of their classmates who are reading, yet many fail to read. The evidence available suggests that in many of these cases the difficulty may stem from ineffective visual perception.<sup>2</sup>

Many children are coming into our schools lacking in basic perceptual-motor skills. As a result of this basic lack they are less able to participate in the formal educational activities which are arranged for them and they are less able to learn from these activities.<sup>3</sup>

### Visual Perception in Reading

Goins defines reading as "an activity involving the use of the visual apparatus, by means of which verbal symbols

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<sup>1</sup>Smith and Dechant, Psychology in Teaching Reading, 439.

<sup>2</sup>Jean Turner Goins, Visual Perceptual Abilities and Early Reading Progress (Chicago: The University of Chicago Press, 1958), 3.

<sup>3</sup>Kephart, The Slow Learner, 17.

are apprehended and appropriate meaning is elicited."<sup>1</sup> Spache states that for the beginning reader, reading is foremost a visual task which would be impossible for him to accomplish without perceptual and discriminative abilities. A child cannot derive meaning from printed symbols (reading) if he cannot even recognize the configurations of letters. The immediate percept that the child experiences in the learning of reading symbols will depend upon the awareness of present data rather than a memory or image of things past. It is neither a separate object in isolation, nor one of a succession of objects, like beads on a string. Rather, as shown by the stages of development covered, perception is "a part of an ever-changing mental activity likened to preceding sensations and subsequent thinking processes."<sup>2</sup> Change is the first law of growth. The organism is never static. It is an energy system with constant intake and output. The change that occurs in the balance between intake and output is described as growth. The growth process is characterized by both regularity and rhythm.<sup>3</sup>

Due to the interplay of these experience variables into the accommodations, assimilation, and generalizations of the environment, the child and the adult alike learn

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<sup>1</sup>Goins, Visual Perceptual Abilities, 155.

<sup>2</sup>David H. Russell, Children's Thinking (Boston: Ginn and Company, 1956), 66.

<sup>3</sup>William C. Olson, Child Development (Boston: D. C. Heath and Company, 1949), 17.

about things by observing them. Without perception, the child would have no memories or imagination, and little, if any, learning would take place. An example of this is offered by Dechant concerning a child with a perceptual problem when he begins to learn to read.

In the kindergarten or first grade, he will probably be taught to read by the so-called "look and say" method. This method consists of having the child identify the word as a whole. Certain characteristics of the total word are discovered by the child or, if he has difficulty, may be pointed out to him by the teacher. Frequently, we draw a frame around the word so that these characteristics are shown up more forcefully. Thus, the word toot has an element which sticks up at the back of the word and at the front. The child can identify this word by merely recognizing these characteristic elements. Actually, it is not necessary for him to see the remainder of the word at all. If he can recognize these characteristic elements, he can call the word adequately and pass the reading test.

This is easy if the child is good at form perception. He has merely to differentiate out of the globular mass those particular elements which are characteristic of the word. A little later on, however, he is going to be taught to read by the "word analysis" method. Here he is taught to break down the word into its parts and to sound out the characteristic phonetic elements of each of the individual parts. But how can he break this word down into its parts if it does not have any parts to begin with? Since there is no integration between these elements, if he pays attention to one, he loses all the rest. In order to learn satisfactorily by the word analysis method, it is necessary that the child hold together in a pattern all the elements of the word, that he pay attention to these elements in serial order but not lose the total pattern. He is asked to break down into a serial order of parts a whole which for him has no parts. He is asked to integrate in time a series of elements which were presented to him integrated in space. The non-reader suffering from specific reading disability fails to analyze word shapes and sounds systematically so as to be able to associate them together correctly. They fail to recognize that a certain spatial orientation of letters is essential and also a particular order and arrangement of the letters within the word. Again we have no definite evidence that they cannot hear the sounds of the letters and words, though this may occur

in some cases of mild hearing loss and high frequency deafness; but it is probably that many of them do not listen to, and hence do not hear, the separate phonetic units in the total word sound, and do not remember them in their exact order. The result is that they are unable to associate the visual and auditory units, because they are uncertain which correspond with which.<sup>1</sup>

Perception is important for various reasons, one of which is the fact that through this medium most of the "raw materials" of thinking are made available. The raw materials which form the idea or concept of size, form, color, time, movement, weight, and number are the basis for meaning and understanding which the child will carry with him, even if continually being modified, for the rest of his life. These arrived-at generalizations, basic to a child's perception, are basic also to his fund of knowledge, his attitudes, beliefs, and values.

Recognition of printed words, unlike recognition of objects, demands that children note small changes in form, position or directional orientation. Thus for beginning reading there are three levels of perceptual ability needed:

1. an early level of perceptual discrimination in which the child can distinguish different objects,
2. a later level of perceptual analysis in which he recognizes part of the whole configuration,
3. a still later level of perceptual synthesis which involves the ability to combine parts into a whole configuration.<sup>2</sup>

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<sup>1</sup>Emerald Dechant, Diagnosis and Remediation of Reading Disability (New York: Parker Publishing Co., 1969), 64.

<sup>2</sup>Agnes D. FitzGerald, "Perception Skills and Beginning Reading," Reading Instruction: Dimensions and Issues, ed. by William Durr (Boston: Houghton Mifflin Company, 1967), 64.

This recognition or reconstruction of shapes or letters into words is not just a matter of isolating various perceptual qualities, nor is it a question of extracting shapes from objects without more ado. The recognition of words rests upon an active process of putting into relation, and it therefore implies that the action is based on the child's own actions and comes about through their gradual coordination.<sup>1</sup>

In studying reading, Vernon has observed that

a small child does not observe, or observes and remembers only with difficulty, the orientation of shapes and their order or direction in a sequence. That he overlooks the orientation of shapes is naturally to be expected, since one of the things which he has to learn in early childhood is that objects retain their identity when their spatial position and orientation is changed.<sup>2</sup>

Yet, the written symbols p and q, b and d, u and n change identity completely when the position is changed. Closely related to the perception of orientation is the perception of direction and order in a sequence of shapes. Vernon stresses this importance when he states:

This perception of correct order is virtually important in word recognition, writing and spelling. An inability to perceive in this way may be one of the factors causing difficulty in reading.<sup>3</sup>

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<sup>1</sup>Mary H. Bosworth, Pre-reading Improvement of Visual Motor Skills (Winter Haven, Fla.: Winter Haven Lions Research Foundation, Inc., 1967), 5.

<sup>2</sup>M. D. Vernon, Backwardness in Reading: A Study of Its Nature and Origin (Cambridge: University Press, 1957), 16.

<sup>3</sup>Ibid., 20.



Similarly, a child makes little distinction between right and left; he has to be taught which is his right and which is his left hand. Small wonder then that until he is six to seven years old he may not see any difference between the reversed letters. And if he sees that they are different, he may not remember which is which, because usually "remembering is harder than perceiving."<sup>1</sup> However, Vernon states that the tendency to confuse letters or to reverse and invert letters tends to lessen by age seven and to disappear by age eight and one-half years.<sup>2</sup> If children are taught to use context clues, reversal errors are likely to be corrected by the child.

Another factor to be considered is space and form. Without space and form it is impossible to reproduce or even identify objects such as a square or a written word. They establish relationships. Form establishes the relation within the figure and space establishes the relation between the figures. These figures or letters must be recognized by the child as a written symbol for a spoken sound.

In viewing the word there is ample evidence that the young child tends to perceive complex whole shapes rather than its parts when the outline of the whole is fairly simple and obvious. But if on the other hand certain parts of the shape stand out clearly, and the

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<sup>1</sup>M. D. Vernon, "The Development of Visual Perception in Children," Education, LXXVIII (May, 1968), 548.

<sup>2</sup>Vernon, Backwardness in Reading, 26.

the outline of the whole shape is rather complicated, then the parts were perceived rather than the whole.<sup>1</sup>

The systematic analysis of words into letters or phonetic units, associating the correct sounds to these, and blending sounds into whole words, together constitute a procedure necessitating logical reasoning processes which are difficult if not impossible for the young child. Thus for the beginner, the phonetic units, their sounds and shapes, should be attached to meaningful words and never drilled in isolation.<sup>2</sup> Modifying a child's effective set of mental operations depends on a broadly conceived approach which involves all the child's activity.

#### Summary

It can be said that although vision is the supreme sense of man, it can be very gullible, greedy, and shallow. Seeing is not a separate, independent function. Through Kephart's motor behavior theory and Piaget's stages of development, it is possible to grasp the integration of the total action system of the child, his manual skills, his motor behavior, his intelligence, and even his personality traits. When viewed in terms of the action system, the mechanisms of vision become a key to the understanding of reading behavior, whether normal, retarded, or superior.

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<sup>1</sup>M. D. Vernon, "The Perceptual Process in Reading," Reading Teacher, XIII (October, 1959), 5.

<sup>2</sup>Ibid., 7.

The goal of education is not only to increase the amount of knowledge, but also to create the possibilities for a child to invent and discover. In teaching too much too fast, the educator keeps the child from discovering himself. Teaching means creating situations where structures are discovered; it does not mean transmitting structures which are assimilated at the verbal level only.

## CHAPTER III

### STUDIES OF SPECIFIC TESTS

#### Introduction

The five- and six-year-old child who is getting ready to read has new and exacting visual adjustments to make in preparation for reading. Rosen and Ohnmacht tell us that

he must accustom his eyes to near-point vision for increasingly longer periods of time. He must fuse images of two eyes for single vision under more exacting conditions than ever before. The child is called upon to make finer judgments of shape, size, place, relationship and arrangement of visual details than he has ever had to make before. And for the first time, unless he has already learned to read, he will need to direct his eyes in sequence from left to right.<sup>1</sup>

This being so,

a developmental approach to the diagnosis of a child's vision is essential for a better understanding of reading in all its aspects. We should have a more discerning awareness of the deep individual differences which prevail in the acquisition and utilization of the ability to read.<sup>2</sup>

Our task is to interpret vision in terms of overall

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<sup>1</sup>Carl L. Rosen and Fred Ohnmacht, "Perception, Readiness and Reading Achievement in First Grade," Perception and Reading, ed. by Helen K. Smith, Proceedings of the Twelfth Annual Convention of the International Reading Association (Newark, Delaware, 1969), 34.

<sup>2</sup>Arnold Gesell, Frances L. Ilg, and Glenna E. Bullis, Vision: Its Development in Infant and Child (Boston: Paul B. Hoeber, Inc., Medical Book Dept. of Harper & Bros., 1949), 136.

achievement and to analyze the achievement in terms of the developmental status of the organism. This means that "one must take into consideration the basic maturity level at which the child is functioning, as well as his distinctive visual patterns as revealed by skill tests."<sup>1</sup>

Since the child's visual processes must operate effectively in order to obtain meaning from the printed page, the teacher must evaluate the child's perceptual capacities. The present author offers a review of three tests which measure perceptual skills. The first and oldest considered was the Reading Aptitude Test by Marion Monroe. This test was copyrighted in 1935. The Marianne Frostig Developmental Test of Visual Perception, copyrighted 1964, has been considered next, and final consideration has been given to a very recent test, the Clymer-Barrett Pre-Reading Battery, copyrighted in 1968.

#### Reading Aptitude Test

The Reading Aptitude Test is a diagnostic test as well as a reading readiness test. The test was "designed primarily for the purpose of survey and classification of first grade entrants."<sup>2</sup> By the use of this test, children may be grouped early in their school life according to

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<sup>1</sup>Marguerite Eberl, "Visual Training and Reading," Clinical Studies in Reading, II, ed. by Helen M. Robinson, Supplementary Educational Monographs, No. 77 (Chicago: The University of Chicago Press, 1953), 144.

<sup>2</sup>Marion Monroe, Reading Aptitude Tests Manual, Primary Form (Boston: Houghton Mifflin Company, 1935).

their abilities, and individuals who are likely to have trouble in learning to read may be given remedial work before they suffer the disappointments and unhappiness of failure. In order to accomplish this,

an effort has been made in this test to include items which the literature shows have differentiated between good and poor readers. For example, the literature suggests that children who are successful in beginning reading have better motor control than children who are unsuccessful. A test of motor control, therefore, is included in the examination. The other tests cover such things as memory of orientation of forms, ocular-motor control and attention, visual memory, auditory word discrimination, sound blending and picture vocabulary. The foregoing are tested in a group-test. A few individual tests are also included. Auditory memory, speed and accuracy of articulation and speed of association are examples of individual tests.<sup>1</sup>

As was stated above the test has both a group and an individual section. The group test may be administered to ten or twelve children at once and requires about thirty to forty minutes. The individual test then requires an additional ten to fifteen minutes per child.

The score is given in a composite percentile.

Research done by the test's authors at the time of standardization found that

children who were able to make scores of eighty percentile or above on the aptitude tests, without exception, proved to be the superior readers in their classes at the end of the first grade. On the contrary, those who scored below the twentieth percentile without exception proved to be the poorest readers in the class. Scores above the sixtieth percentile were usually followed by

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<sup>1</sup>George D. Space, "Review of Reading Aptitude Test," The Sixth Mental Measurement Yearbook, ed. by Oscar Krisen Buros (Highland Park, N.J.: The Gryphon Press, 1965), 1110.

average or superior reading and scores below the fortieth percentile usually indicated poor achievement in reading, although there are a few exceptions to this trend.<sup>1</sup>

The overall reliability coefficient, corrected by the Spearman-Brown formula, is + .87.

Marianne Frostig Developmental Test  
of Visual Perception

"The test is designed to measure certain operationally defined perceptual functions, and to pinpoint the age at which they normally develop."<sup>2</sup> The test seeks to measure five operationally defined perceptual skills as follows:

Test I

Eye-Motor Coordination - a test of eye-hand coordination involving the drawing of continuous straight, curved, or angled lines between boundaries of various widths, or from point to point without guide lines.

Test II

Figure-Ground - a test involving shifts in perception of figures against increasingly complex grounds. Intersecting and 'hidden' geometric forms are used.

Test III

Constancy of Shape - a test involving the recognition of certain geometric figures presented in a variety of sizes, shadings, textures, and positions in space and their discrimination from similar geometric figures. Circles, squares, rectangles, ellipses and parallelograms are used.

Test IV

Position in Space - a test involving the discrimination of reversals and rotations of figures presented in series. Schematic drawings representing common objects are used.

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<sup>1</sup>Monroe, Reading Aptitude Tests Manual.

<sup>2</sup>James M. Anderson, "Review of Marianne Frostig Developmental Test of Visual Perception, Third Edition," The Sixth Mental Measurements Yearbook, 553.

Test V

Spatial relationship - a test involving the analysis of simple forms and patterns. These consist of lines of various lengths and angles which the child is required to copy, using dots as guide points.

These specific subtests were selected because clinical observation pointed to their seeming relevance to performance in nursery school, kindergarten, and the elementary years. For example, on the accurate perception of position in space the spatial relationships depend in part on the ability to differentiate similar letters like b and d, and to recognize the sequence of letters in a word and words in a sentence.<sup>1</sup>

The Developmental Test of Visual Perception can be used either as a screening device for nursery school, kindergarten, and first-grade children, or as a clinical evaluation instrument for older children who suffer from learning difficulty. The test is suitable for group or individual administration.

Time of administration to a group requires less than one hour. The score is translated into a perceptual age. This perceptual age level is defined in terms of the performance of the average child in the corresponding age group for each subtest. Such a score then indicates to the teacher that a child has below-average ability in a particular subtest and may benefit from training in that area.

As a reviewer of the test, Anderson presents the following limitations.

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<sup>1</sup>Marianne Frostig, Administration and Scoring Manual: Marianne Frostig Developmental Test of Visual Perception (Palo Alto, Calif.: Consulting Psychologist Press, 1966), 5.



1. The directions on the whole are clear and concise. However, lack of time limits or instructions for what to do with laggards should prove a handicap for some teachers.
2. Information for evaluating this test is at best incomplete if not haphazardly presented. Nowhere is there given a breakdown of the composition of the standardization population.<sup>1</sup>

However, Anderson does add:

The authors of this test have such a real contribution to offer to educators and psychologists alike that it is regrettable that they have apparently prematurely offered their test as a finished product. In a pre-publication report on the 1962 standardization, this reviewer finds evidence of much thought and careful work as well as an excellent start at standardization. The concept of perceptual age and perceptual quotient appear most useful and intriguing. Both reliability and validity studies reported in this paper are promising and even exciting though they are done on inadequate samples and on varying age groups.<sup>2</sup>

#### Clymer-Barrett Pre-reading Battery

The Clymer-Barrett Pre-reading Battery was designed to

aid the teacher in evaluating pupil behaviors which are related to success in beginning reading. Although the battery focuses primary attention on visual and auditory skills, it also includes a Pre-reading Rating Scale which calls for subjective evaluation of pupils' skills and abilities in areas not readily measured by paper and pencil tasks, thus a pupil's overall performance on the battery should provide a reasonable index of his preparedness for learning to read.<sup>3</sup>

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<sup>1</sup>Anderson, "Marianne Frostig Developmental Tests," 553.

<sup>2</sup>Ibid.

<sup>3</sup>Theodore Clymer and Thomas Barrett, Clymer-Barrett Pre-reading Battery: Manual Form A (Princeton, N.J.: Personnel Press, a division of Ginn and Co., 1968), 6.

In addition to estimating general preparedness for learning to read, the battery also provides diagnostic information particularly in the areas of:

Visual Discrimination

1. Recognition of letters
2. Matching words

Auditory Discrimination

1. Discrimination of beginning sounds in words
2. Discrimination of ending sounds in words

Visual-Motor Coordination

1. Shape completion
2. Copy-a-sentence<sup>1</sup>

The test also requires the teacher to make subjective evaluations of pupils' behavior in seven areas:

1. facility in oral language,
2. concept and vocabulary development,
3. skills in critical and creative thinking,
4. social skills,
5. emotional development,
6. attitude toward and interest in reading,
7. work habits.<sup>2</sup>

The inclusion of a rating scale in a test of this type is relatively unique. By focusing upon the key aspects of the child's intellectual, social and emotional development, the scale is intended to broaden the scope of the data on which instructional decisions will be made.

Such information should provide a basis for designing programs of instruction in reading which will place emphasis on individual strengths while individual weaknesses are being reinforced.

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<sup>1</sup>Ibid., 7.

<sup>2</sup>Ibid.

Time for administration is designed to take approximately ninety minutes. It may be administered to a group of children midway in their kindergarten year or in the early weeks of first grade.

#### Summary

In including these three given tests the author has attempted to present for consideration only those means of measurement which deal chiefly with the diagnosis of visual perceptual disability. The Monroe test was presented for its measurement of group and individual performance. Too, this test has proven a very accurate and reliable instrument. The Frostig test has been considered due to its unique ability to pinpoint specific developmental perceptual ages. It holds limitations at present but is considered to have a real contribution to offer. Finally the Clymer-Barrett Battery was considered not only because it is a recent test but also for its ability to unite into one composite score the influence of intellectual, social and emotional development.

These tests each have individual strengths and weaknesses but it must be kept in mind that any instrument of measurement is only as valuable as the administrator's skills.

## CHAPTER IV

### SUMMARIES AND CONCLUSIONS

#### Summary of Literature Related to Perception

Smith and Dechant,<sup>1</sup> Vernon,<sup>2</sup> and Kephart<sup>3</sup> hold that perception is a form of behavior that results in an organization of incoming sensory data. Through the basic skills of perception, concrete formation, and language the child is able to interact with his environment in an adaptive manner. Robertson goes further to state, "The development of perception is inseparably associated with the development of thinking as well as being basic to abstract thinking."<sup>4</sup> Piaget has also declared that it is difficult to distinguish where intelligence begins and perceptual activities end.<sup>5</sup> Rosmischer, in a study of Piaget's theory, demonstrates this interplay of mental ability and visual perception in

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<sup>1</sup>Smith and Dechant, Psychology in Teaching Reading, 34.

<sup>2</sup>M. D. Vernon, The Psychology of Perception (Baltimore: Penguin Books, Inc., 1962), 51.

<sup>3</sup>Kephart, The Slow Learner, 20.

<sup>4</sup>Jean E. Robertson, "Kindergarten Perception Training: Its Effect on First Grade Reading," Perception and Reading, ed. by Helen K. Smith, Proceedings of the Twelfth Reading Convention of the International Reading Association (Newark, Delaware), 96.

<sup>5</sup>Wolinsky, "Piaget's Theory of Perception," 12.

developing a person's intellect when he states: "Piaget emphasizes neither the external and empirical, nor the internal and rational. Rather, he represents a dynamic interplay between both factors."<sup>1</sup>

This principle being such, the learning process then rests heavily upon the plasticity and adaptability of the individual child. The child must be capable of responding to the environmental demands placed upon him while at the same time making structural changes where necessary. Ayres states that "the capacity of the young brain's potential for reorganization undergird's the assumption that central nervous system integration is a matter of degree and kind rather than presence or absence."<sup>2</sup>

Implications and ramifications for the educator of the very young from this view of visual perception and intelligence are wide. It is apparent from the literature that "skill in visual discrimination is a major factor in beginning reading and learning."<sup>3</sup> Thus the development

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<sup>1</sup>Miriam D. Rosemischer, "Individual Research," Educational Horizons, XLVII (Spring, 1969), 131.

<sup>2</sup>A. Jean Ayres, "Reading--A Product of Sensory Integrative Process," Perception and Reading, ed. by Helen K. Smith, Proceedings of the Twelfth Annual Convention International Reading Association (Newark, Del., 1968), 79.

<sup>3</sup>Warren H. Wheelock, "An Investigation of Visual Discrimination Training for Beginning Readers," Perception and Reading, ed. by Helen K. Smith, Proceedings of the Twelfth Annual Convention International Reading Association (Newark, Del., 1968), 101.

of visual discrimination is one of the major objectives of instruction in beginning reading. However, it must also be stressed that in order to read "there must be efficient communication between visual, auditory, and somatosensory systems."<sup>1</sup> The actual development of perception requires time since it is a developmental operation. Yet as stated by Heilman, "while maturation cannot be hastened, visual discrimination can be 'sharpened' through experience and practice."<sup>2</sup> Thus stress should be placed in the initial stages of learning on the perceptual level, lest later learning at the conceptual level be faulty and without a basic structure upon which the child can develop his linguistic skills.<sup>3</sup>

#### Summary of Perceptual Testing Programs

Due to the stress placed upon visual perception within the past ten to fifteen years, much research concerning the topic and its relationship to reading has been done. From this research several visual perceptual abilities have been found to be involved in the process of recognizing and

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<sup>1</sup>Ayres, "Reading--A Product of Sensory Integration Processes," 79.

<sup>2</sup>Joseph M. Wepman, "The Modality Concept--Including a Statement of the Perceptual and Conceptual Levels of Learning," Perception and Reading, ed. by Helen K. Smith, Proceedings of the Twelfth Annual Convention International Reading Association (Newark, Del., 1968), 6.

<sup>3</sup>Marianne Frostig, "Visual Modality, Research and Practice," Perception and Reading, ed. by Helen K. Smith, Proceedings of the Twelfth Annual Convention International Reading Association (Newark, Del., 1968), 28.

discriminating stimuli. Chief among these abilities are "eye-hand coordination, figure-ground perception, constancy of perception, perception of position in space and perception of spatial relationships."<sup>1</sup> It is highly desirable to have standardized means of assessing a child's perceptual performance. Pinpointing the areas of a child's visual perceptual difficulties and measuring their severity is helpful and often necessary in designing the most efficient training program to aid in overcoming the disabilities. As a means to assist in this, three diagnostic tests of visual perception have been described in this work. It must be stated that these three do not encompass the entire scope of available material, but merely give a sample of three types.

It is most important that a child's perceptual disability, if any exists, be discovered as early as possible. All research to date which has explored the child's general classroom behavior has confirmed findings that kindergarten and first grade children with visual perceptual disabilities are likely to be rated by their teachers as "maladjusted in the classroom; not only do they frequently find academic learning difficult, but their ability to adjust to the social and emotional demands of classroom procedures is often impaired."<sup>2</sup>

Identification and training of children with visual

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<sup>1</sup>Frostig, Administration and Scoring Manual, 15.

<sup>2</sup>Frostig, "Visual Modality, Research and Practice,"

perceptual disabilities during the preschool years or at the time of school entrance would help prevent many instances of school failure and maladjustment caused by visual perceptual difficulties. Although "some children may overcome these by age nine there is as yet no method to predict whether a child will be able to do so without help."<sup>1</sup> Even if a child does later learn to overcome, or compensate for, his visual perceptual deficiency, he has frequently experienced school as frustrating, suffered feelings of inadequacy, and perhaps developed other, secondary emotional problems.

The actual planning or research on various perceptual training programs has not been done here. However, it should be stressed that "many children with learning problems appear to have greater facility in using one input pathway than in using another."<sup>2</sup>

It is then most important for the educator, once the area of weakness is defined, to use the child's best-developed abilities and his best modality for the learning of new matter and skills. Remedial tasks should be directed at the modality where a developmental lag is present, thereby directing and strengthening it. The child having difficulty learning to read may have had too difficult material initially. Comprehension cannot be demanded before the child has mastered the preverbal perceptual distinctions

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<sup>1</sup>Arthur W. Heilman, Teaching Reading (Columbus, Ohio: Charles E. Merrill Book Co., Inc., 1961), 41.

<sup>2</sup>Wepman, "The Modality Concept," 3.



necessary for phonic interpolation. The development of the maturing perceptual level can be seen in the progressive achievement of such skills as "discrimination, retention and recall of sounds and letters, sequential ordering of phonemes and graphemes, and the ability to interrelate one with the other."<sup>1</sup>

#### Conclusion

The ability to learn to read then is postulated as the end product of a long evolutionary course in which the increased capacity of sensory integration, accompanied by the ability to utilize and adapt motor response, has furnished a critical foundation for the child. This elementary sensori-motor development must of course be followed by more complex visual and auditory processes, language and cognition. To assure this, the teacher must diagnose learning needs and individualize instruction, but most of all gain knowledge of perceptual development of young children.

#### Further Research

It would be profitable to explore the entire field of tests available for testing visual perception. A wide collection of available measurements would benefit primary teachers. Also, a compilation of the various training programs and materials available for remediation would prove invaluable.

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<sup>1</sup>Ibid., 5.

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