SHAW, MARGARET HELEN MILLER

A PSYCHOLINGUISTIC ANALYSIS OF THE ORAL READING MISCUES AND THE COGNITIVE CONTROL OF DISTRACTIBILITY OF REMEDIAL READERS

The University of Oklahoma PH.D. 1979

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A PSYCHOLINGUISTIC ANALYSIS OF THE ORAL READING MISCUES AND THE COGNITIVE CONTROL OF DISTRACTIBILITY OF REMEDIAL READERS

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MARGARET H. MILLER SHAW

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A PSYCHOLINGUISTIC ANALYSIS OF THE ORAL READING MISCUES

AND THE COGNITIVE CONTROL OF DISTRACTIBILITY

OF REMEDIAL READERS

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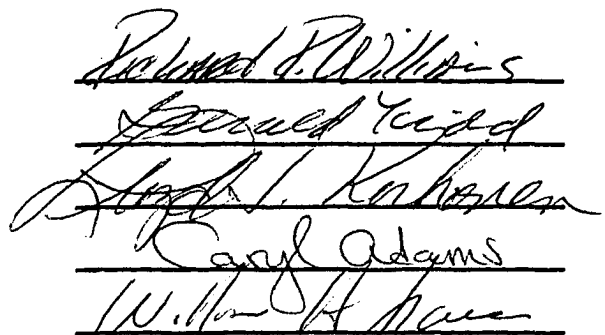

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things through Him." Because He holds the future, I can face tomorrow without fear.

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This dissertation is lovingly dedicated to my daughter Megan, the joy in my life.

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CHAPTER I

THE PROBLEM

Introduction

Several studies have reported findings that lend support to a growing theory base that cognitive styles influence reading achievement such as those by Ausburn,[1] Back and Hoover,[2] Denney,[3] and Readence.[4] Cognitive styles represent the manner in which an individual receives,

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[1] L. J. Ausburn, "Relationships Among Cognitive Style Factors and Perceptual Types in College Students" (Ph.D. dissertation, University of Oklahoma, 1976).

[2] L. J. Ausburn, K. T. Back, and B. Hoover, "A Comparison of Remedial and Non-remedial Readers on Selected Perceptual Style Variables," paper presented at AECT, Anaheim, California, 1976.

[3] Douglas Denney, "Relationship of Three Cognitive Style Dimensions to Elementary Reading Abilities," Journal of Educational Psychology 66, 5 (1974): 702-709.

[4] John E. Readence, "Cognitive Style and Oral Reading Behavior of Third Grade Children," Reading Improvement 14, 3 (1977): 175-181.

processes, and uses information. These cognitive styles address learning styles, but they are better represented as psychological dimensions. They represent consistencies in an individual's manner of acquiring and processing information. We may be teaching some readers to process information in a way counteractive to their cognitive style. This may in turn produce a remedial reader, or one who is reading significantly below the level at which he should be able to read based upon his intellectual ability.

The cognitive control of distractibility is one dimension of cognitive style that may influence how the reader processes the printed word and derives meaning from it. Ragan and his colleagues have described this construct in this manner:

> Distractibility is considered to be a cognitive style that can be measured by one's reaction to contradictory or intrusive cues, that is, the degree to which one directs attention selectively to relevant stimuli and withholds attention from irrelevant stimuli.[5]

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[5] T. J. Ragan et al., Cognitive Styles: A Review of the Literature. (Lowry AFB, Colorado: Technical Training Division, Air Force Human Resources Laboratory, May 1979).

Santostefano has defined this construct as:

> The manner in which a person deals with a stimulus field containing information defined as relevant and irrelevant in terms of the requirements of the task. The hallmark of this control, therefore, is selective deployment of attention, and in its process it emphasizes that attention is to be withdrawn and withheld from irrelevant information and directed at and sustained on relevant information.[6]

Gardner[7] and his associates and Denney[8] have called the construct "constricted-flexible". Denney and his associates have now identified the construct as "selective attention".[9]

A recent model of reading which has proven to be of heuristic value in the amount of research it has generated is the Goodman[10] model of the reading process. Both

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[6]Sebastiano Santostefano, "Cognitive Controls and Exceptional States in Children," Journal of Clinical Psychology 20 (1964): 213-218.

[7]R. W. Gardner et al, "Cognitive Control: A Study of Individual Consistencies in Cognitive Behavior," Psychological Issues 1, 4 (1959): Whole No. 4.

[8]Denney, "Relationship of Three Cognitive Style Dimensions," pp. 702-709.

[9]Douglas R. Denney, Jacquelyn D. Elliott, and Brenda P. Bunting, "Selective Attention in Reading: Interference and Incidental Learning Procedures" (University of Kansas, 1978).

[10]Kenneth S. Goodman, "Behind the Eye: What Happens in Reading," in Theoretical Models and Processes of Reading, ed. Singer and Ruddell (Neward, Delaware: International Reading Association, 1976), pp. 470-496.

Goodman[11] and Smith[12] have focused upon the reading process and what the reader is actually doing when interacting with print. They view the reading act as a psycholinguistic process.

Psycholinguistics is the study of the relationship between thought and language. It encompasses two broader disciplines, psychology and linguistics. Linguistics is the scientific study of language, its nature, structure and development. Psychology is the study of behavior, specifically dealing with the mind and its mental and emotional processes. Included in these are the cognitive processes through which one receives, organizes, and uses information. Psycholinguistics, then, studies the interaction between language and cognitive processes.

In his "psycholinguistic guessing game", Goodman states that efficient readers predict what the meaning of a text will be and then selectively sample relevant print just enough to confirm or "disconfirm" their hypotheses.[13]

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[11]Kenneth S. Goodman, "Reading: A Psycholinguistic Guessing Game," Journal of the Reading Specialist 4, 6 (1967): 126-135.

[12]Frank Smith, Understanding Reading: A Psycholinguistic Analysis of Reading, 2nd ed. (New York: Holt, Rinehart and Winston, 1978).

[13]Goodman, "Guessing Game," pp. 126-135.

They do this on the basis of three types of information cueing systems, graphophonic, syntactic, and semantic. The redundancy of our language makes the predictions possible, and proficient readers are continually testing their choices against their developing meaning by asking themselves if what they are reading makes sense.

Significance of the Study

If distractibility is a cognitive control dependent upon the manner in which one directs or withholds attention to relevant and irrelevant information, can remedial readers who are highly distractible direct their attention to relevant cues and withhold attention from the irrelevant cues in print? This study will address this question and add to the theoretical base of knowledge of cognitive styles and psycholinguistics to provide information about the reading strategies of remedial readers.

Statement of the Problem

What is the relationship between remedial reading students' cognitive control of distractibility and their ability to use psycholinguistic cueing systems in reconstructing meaning from print?

Hypotheses

The null hypotheses formulated for this study are as follows:

H_{01}: There are no significant differences between high and low distractibility levels in graphic similarity of miscues by remedial readers.

H_{02}: There are no significant differences between high and low distractibility levels in sound similarity of miscues by remedial readers.

H_{03}: There are no significant differences between high and low distractibility levels in syntactic acceptability of miscues by remedial readers.

H_{04}: There are no significant differences between high and low distractibility levels in semantic acceptability of miscues by remedial readers.

H_{05}: There are no significant differences between primary and intermediate remedial readers' scores on graphic similarity of miscues.

H_{06}: There are no significant differences between primary and intermediate remedial readers' scores on sound similarity of miscues.

H_{07}: There are no significant differences between primary and intermediate remedial readers' scores on syntactic acceptability of miscues.

H_{08}: There are no significant differences between primary and intermediate remedial readers' scores on semantic acceptability of miscues.

H_{09}: There is no significant interaction between grade level and distractibility index on graphic similarity of miscues by remedial readers.

H_{010}: There is no significant interaction between grade level and distractibility index on sound similarity of miscues by remedial readers.

H_{011}: There is no significant interaction between grade level and distractibility index on syntactic acceptability of miscues by remedial readers.

H_{012}: There is no significant interaction between grade level and distractibility index on semantic acceptability of miscues by remedial readers.

Definition of Terms

The following terms have been developed in connection with this study:

Distractibility. This cognitive control principle concerns one's reaction to information defined as relevant and irrelevant. It is measured by the degree that an individual directs attention to relevant information and withholds attention from irrelevant information.

Miscue. Any oral response which differs from the expected response of the written text is termed a

miscue. A miscue is not a random error but "is cued by the thought and language of the reader in his encounter with the written material".[14]

Linguistic Strategies. This term refers to the reader's ability to use the psycholinguistic cueing systems, specifically, the graphophonic, syntactic, and semantic information found in print. The systems are interrelated.

Graphic Similarity. The degree to which the miscue looks like what was expected is termed graphic similarity. The following are examples of the possible degrees of similarity:

Reader	Text	Graphic Similarity
choose	chose	high
was	has	some
give	take	none

Sound Similarity. The degree to which the miscue sounds like what was expected is termed sound similarity. The following are examples of the possible degrees of similarity:

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[14]Yetta M. Goodman and Carolyn L. Burke, Reading Miscue Inventory Manual Procedure for Diagnosis and Evaluation (New York: Macmillan Publishing Co., Inc., 1972), p. 5.

Reader	Text	Sound Similarity
oldest	oddest	high
then	when	some
or	and	none

Syntactic Acceptability. The degree to which the miscue occurs in a structure which is grammatically acceptable is its syntactic acceptability. This term is interchangeable with the term "grammatical acceptability". The following are examples of the possible degrees of acceptability:

Reader: They saw a man and his wife starting by their house.
Text: They saw a man and his wife standing by their house.
Syntactic Acceptability: High

Reader: Here wings were folded quietly at her sides.
Text: Her wings were folded quietly at her sides.
Syntactic Acceptability: Partial

Reader: Only "morning" when I woke up,....
Text: One "morning" when I woke up,....
Syntactic Acceptability: None

Semantic Acceptability. The degree to which the miscue occurs in a structure which maintains an acceptable meaning. The following are examples of the possible degrees of acceptability:

Reader: I can't hear her heartbeat.
Text: I can't hear her heart.
Semantic Acceptability: High

Reader: We liked her too much to give a chance on losing her.
Text: We liked her too much to take a chance on losing her
Semantic Acceptability: Partial

Reader: We never figured out why he caused the pet he did.
Text: We never figured out why he chose the pet he did.
Semantic Acceptability: None

Remedial Reader. A remedial reader was defined as one of at least average intelligence whose instructional reading level was below grade level as measured by the Standard Reading Inventory.[15] Those students completing first, second, and third grades who were .5 reading level or more below their grade placement were defined as remedial readers. Those students completing the fourth, fifth, and sixth grades who were 1.0 reading level or more below their grade placement were defined as remedial readers. Children with gross neurological impairment, inadequate sensory systems, or English as a second language were not included in this definition of a remedial reader.

Instructional Level. In this study instructional reading level refers to the highest passage on the Standard

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[15]Robert A. McCracken, Standard Reading Inventory, Stories and Manual (Klamath Falls, Oregon: Klamath Printing Company, 1966).

Reading Inventory (Form A) in which the reader was able to correctly pronounce between 91% and 94% of the words in the story. At least 70% of the comprehension questions which followed must have been correctly answered. This level was to provide enough new words to be challenging but not frustrating.

Frustration Level. This level of reading refers to the first passage of the Standard Reading Inventory (Form A) on which the reader falls below a word recognition criteria of less than 91% and a comprehension criteria of less than 70%. At this level of reading the learning process breaks down as the material becomes too difficult.[16]

Delimitations of the Study

This investigation included an analysis of oral reading miscues made by remedial readers on extended oral passages at their instructional levels. Thirty-two subjects were selected from approximately forty-five screened by the Standard Reading Inventory during summer classes in 1979. Grade levels ranged from those who had finished first grade through those who had finished sixth grade. Results of the

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[16]Edward B. Fry, Reading Instruction for Classroom and Clinic (New York: McGraw-Hall Book Company, 1972), p. 12-13.

miscue analysis were compared to a measure of distractibility. Because remedial reading students are of diverse characteristics, the findings of this investigation can be generalized only to a similar population.

The nature of miscue analysis is somewhat complex. The classification of miscues in each of the cue systems introduces a measure of subjectivity into the analysis.

Assumptions

1. It is assumed that the Reading Miscue Inventory[17] (RMI) is an appropriate instrument to qualitatively analyze the miscues generated by a reader.

2. It is assumed that the story selected for each subject to read is of sufficient difficulty to generate miscues while being at instructional level reading material.

3. It is assumed that the Fruit Distraction Test[18] (FDT) is an appropriate instrument to measure the cognitive control of distractibility.

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[17] Goodman and Burke, Reading Miscue Inventory.

[18] Sebastiano Santostefano, Fruit Distraction Test (Belmont, Massachusetts: By the Author, McLean Children's Hospital, 115 Mill Street).

4. It is assumed that each subject in the study is average or above in intellectual functioning. Research by Ausubel, Schiff, and Zeleny has indicated that teachers' judgment is just as effective in assessing this construct as standardized testing.[19] Their conclusions were supported in findings by English and Kiddler in a study of kindergarteners.[20] It was determined by parent interviews whether each subject attended a regular classroom or had ever been identified for special services by the screening measures of the elementary counselors of the public school system used in the study.

Organization of the Study

The introduction to the study, significance of the study, the problem under investigation, hypotheses to be tested, definition of terms, delimitations, assumptions, and general organization have been introduced in Chapter I. A review of the literature related to this study is presented

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[19] D. P. Ausubel, H. H. Schiff, and M. P. Zeleny, "Validity of Teachers' Ratings of Adolescents' Adjustment and Aspiration," Journal of Educational Psychology 45 (1974): 394-406.

[20] R. A. English and J. W. Kiddler, "Note on Relationships Among Mental Ability Scores, Teachers' Rankings, and Rate of Acquisition for Four-Year-Old Kindergarteners," Psychological Reports 24 (1969): 554.

in Chapter II. Specific topics included are cognitive control and cognitive style theory, distractibility and reading, psycholinguistic theory, and miscue analysis. The methodology, procedures, and instruments to gather the data are described in Chapter III. Included is the rationale for the sample selection and a description of the pilot study. A training session for the examiners is documented. The findings and an analysis of the data are presented in Chapter IV. Tables which depict the data are included. A summary of the investigation, conclusions, and recommendations of the study are discussed in Chapter V.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The survey of the literature presents research related to the constructs of the cognitive control of distractibility and psycholinguistic cueing systems as stated in the problem. A review of cognitive style and cognitive control theory is presented first, followed by a discussion of the cognitive control of distractibility and reading, psycholinguistic theory, and miscue analysis.

Cognitive Styles and Cognitive Controls

Cognitive styles have been identified as psychological dimensions which represent consistencies in an individual's perceptual organization and conceptual categorization of information. They represent "the manner in which an individual receives, processes, and uses information".[1] They are relatively enduring dispositions to behave in certain ways.

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[1] Ragan et al, "Cognitive Styles," p. 1.

Witkin first began using the concept of cognitive style in 1949 in his work with the field dependent/field independent construct. His original studies were developed in relation to perceptions, to determine how individuals orient themselves in space. These resulted in the formulation of the perceptual constructs of field dependence/field independence. Subsequent studies were extended into the intellectual domain, and at that time Witkin and his colleagues renamed his perceptual styles "cognitive styles".[2]

Kagan[3] identified and investigated the concept of impulsivity-reflectivity in a series of studies between 1963 and 1965. He, too, identified this construct as a cognitive style or cognitive or conceptual tempo. Both Kagan and Witkin derived the cognitive style concept from empirical studies and assumed the predominance of a singular style in an individual's behavior.

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[2]H. A. Witkin et al, "Field-Dependent and Field-Independent Cognitive Style and Their Educational Implications," Review of Educational Research 47, 1 (Winter 1977): 2-44.

[3]J. Kagan, Matching Familiar Figures Test, "n.p." 1969.

Klein[4] and his followers formulated the concept of "cognitive control". Distinguishing itself from the concept of cognitive style, the construct of cognitive control has been developed within the assumptions of psychoanalytic theory. Those who are proponents of this cognitive theory believe that man is a self-regulating, dynamic system, adapting as the situation demands. Therefore, individuals might deploy various controls depending upon their perceptions of the immediate situational requirements. Cognitive controls are thought to represent an individual's customary modes of facing reality. They work together to produce consistencies in a person's perceptual, memory, thinking, and motoric activities. Any given cognitive control is thought to operate within a limited range of situations which pose similar adaptive requirements.

Santostefano proposes that "several cognitive controls could form a unique configuration representing the cognitive style of an individual".[5] The composition

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[4]G. S. Klein, "Need and Regulation," in Nebraska Symposium on Motivation, ed. M. R. Jones (Lincoln: University of Nebraska Press, 1954).

[5]Sebastiano Santostefano, A Biodevelopmental Approach to Clinical Child Psychology (New York: John Wiley & Sons, 1978), p. 104.

of controls within a person may provide a basis for predicting behaviors that cannot be predicted from individual controls alone. Santostefano identifies five such cognitive controls which he measures in his psychoanalytic therapy with learning-disabled children. They are: "leveling-sharpening", "scanning" (also referred to as focusing or focal attention), "field articulation" (also referred to as constricted-flexible), "equivalence range" (later referred to as conceptual differentiation), and "tolerance for unrealistic experiences".[6] He has placed these five controls in a hierarchical developmental model in which each is an antecedent to the one which follows.

Distractibility and Reading

Santostefano did much of the developmental work in the area of distractibility, which he calls "field articulation".[7] He states that:

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[6]Ibid., p. 101.

[7]Santostefano, "Cognitive Controls," pp. 213-218; Sebastiano Santostefano and Evelyn Paley, "Development of Cognitive Controls in Children," Child Development 35 (1964): 939-949.

> When dealing with a task, some individuals selectively withhold attention from irrelevant information and are not disrupted or inappropriately influenced by it. Other individuals direct significant attention to both relevant and irrelevant stimuli, and their performance with the central task is disrupted accordingly.[8]

Few studies were identified which examined the relationship between reading and distractibility. Santostefano, Rutledge, and Randall explored three cognitive controls, focal attention, field articulation, and leveling-sharpening, of twenty-four third, fourth, fifth, and sixth grade boys with reading disability. Only field articulation in managing relevant and irrelevant information distinguished the remedial readers.[9]

Denney also compared good and poor readers in grades two to five on three cognitive style dimensions. He found that the measure of constricted-flexible control discriminated between good and poor readers best.[10]

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[8]Santostefano, "Biodevelopmental Approach," p. 101.

[9]Santostefano, Rutledge, and Randall, "Cognitive Styles and Reading Disability," pp. 57-62.

[10]Denney, "Relationship of Three Cognitive Style Dimensions," pp. 702-709.

Silverman compared high achievers and under-achievers and found that high achievers required less time and made fewer errors on his measure of distractibility.[11] Alwitt found no difference in the distracting element of his study between children with reading disabilities and normal controls.[12]

Others have studied the construct of distractibility as a component of attention. When a person is "attending", changes have been measured and recorded in heart rate, galvanic skin responses, brain rhythm patterns, pupillary dilation, and blood pressure. Others have measured attention responses under various distracting conditions such as flashing lights, extraneous color cues, or auditory distractors. Some have related components of standardized tests within an attentional framework.

Marliave examined the relationship between selective attention and the learning process. He proposed that two forms of attention exist: inspectional attention

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[11]M. Silverman, A. Davids, and J. M. Andrews, "Powers of Attention and Academic Achievement," Perceptual and Motor Skills 17 (1963): 243-249.

[12]L. F. Alwitt, "Attention on a Visual Task Among Non-readers and Readers," Perceptual and Motor Skills 23 (1966): 361-362.

and comprehensional attention. Comprehensional attention combines the inspectional process with more complex cognitive operations. He cited a training procedure which was found to "invoke comprehensional attention as a means of enabling children to separate relevant from irrelevant dimensions."[13] He suggested that children's selective attention to an irrelevant dimension may serve to "block" the relevant dimension from his range of understanding.[14]

Weiner and Berzonsky discussed selective attention in a similar model to the one Marliave described. Their first stage is "one of discrimination where the subject identifies both the relevant and incidental cues. The second stage involves focusing on the relevant features and ignoring the incidental ones."[15]

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[13]Richard Marliave, Selective Attention and Cognitive Learning (Madison, Wisc.: ERIC Document Reproduction Service, ED 092908, 1973), p. 8.

[14]Ibid., pp. 1-17.

[15]Alan S. Weiner and Michael D. Berzonsky, paper presented at American Educational Research Association (Washington, D.C.: ERIC Document Reproduction Service, ED 106723, 1975), p. 12.

Willows studied the selective attention of good and poor sixth grade readers. He found that good readers made more intrusion errors under experimental conditions than they did under the control conditions; that is, they made more mistakes in comprehension that resulted from their attending to words typed in red between the lines of black print as a distraction to reading. However, poor readers made more non-intrusion errors than good readers under both control and experimental conditions. He concluded that poorer readers are unable to ignore adjacent but obviously irrelevant cues in their reading and appear to "focus most of their processing capacity on the visual aspects of the display" while the better readers "are able to concentrate their processing capacity on extraction of meaning".[16]

Denney, Elliott, and Bunting studied selective attention in matched samples of normal and poor readers from grades two through five. An interference procedure significantly distinguished differences in selective attention, causing Denney and his colleagues to conclude

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[16]Dale M. Willows, "Reading Between the Lines: Selective Attention in Good and Poor Readers," Child Development 45 (June 1974), p. 414.

that poor readers were more highly distracted by irrelevant information.[17]

Lahaderne cited data to demonstrate that attention was unrelated to attitudinal factors but not to some achievement factors. Even when intelligence was partialled out, a positive correlation between reading performance and attention still remained. This was not true of an arithmetic performance measure and attention, causing Lahaderne to conclude that "attention makes a difference with respect to certain types of achievement but not others.[18]

Cobb reported a significant correlation between attention and reading achievement in the fourth grade.[19] Lahaderne reported a significant correlation range between attention and reading in the sixth grade.[20] Samuels and

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[17]Denney et al., "Selective Attention in Reading."

[18]H. M. Lahaderne, "Attitudinal and Intellectual Correlates of Attention: A Study of Four Sixth Grade Classrooms," Journal of Educational Psychology 59 (1968), p. 323.

[19]J. A. Cobb, "Relationship of Discrete Class-Room Behaviors to Fourth Grade Academic Achievement," Journal of Educational Psychology 1, 66 (1974), p. 31.

[20]Lahaderne, "Attitudinal Correlates of Attention," p. 322.

Turnure found a significant correlation between attention and word recognition among first-grade children before a history of academic failure could be established.[21]

In a study of children's learning and cognition, Stevenson concluded that young children were easily distracted by the presence of irrelevant information. He stated that the ability to spontaneously attend selectively to critical features of our environment does not develop until a child is ten or twelve years old. He further concluded that children utilized hypotheses in learning and cognition, but their hypotheses may be inappropriate for the problem being presented.[22] This researcher conducted a study in which children ages three, five, seven, and nine were required to identify the correct member of five pairs of pictures of common animals. Performance improved until age seven; by age nine, performance matched that of the three-year-olds. When asked

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[21]S. J. Samuels and J. Turnure, "Attention and Reading Achievement in First Grade Boys and Girls," Journal of Educational Psychology 1, 66 (1974), p. 31.

[22]Harold W. Stevenson, The Young Child: Learning and Cognition (Ann Arbor, Mich.: ERIC Document Reproduction Service, ED 085 104, 1972), p. 8.

how they had known which animal was correct, the older children responded in ways that caused Stevenson to conclude that they must have formed complex hypotheses, and these hypotheses had hindered their progress in reaching the simple, correct solution.[23]

Recent studies have also been addressed to attentional processes in reading to determine whether or not pictures or illustrations act as distractors in beginning reading instruction. Samuels stated that they are distracting factors in sight vocabulary acquisition.[24] In other studies Christina and Montare found that pictures or illustrations assist sight vocabulary acquisition.[25]

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[23]Ibid., p. 12.

[24]S. Jay Samuels, "Attentional Processes in Reading: The Effect of Pictures on the Acquisition of Reading Responses," Journal of Educational Psychology 58 (1967): 337-342; and S. Jay Samuels, "Can Pictures Distract Students from the Printed Word: A Rebuttal, Journal of Reading Behavior 9 (1978): 361-364.

[25]Robert Christina, "Do Illustrations Hinder or Assist Sight Vocabulary Acquisition?," Twenty-Second Yearbook of the National Reading Conference, Inc. (Appalachian State University, Boone, N. C., 1973): 185-189; and Alberto Montare, Elaine Elman, and Joanne Cohen, "Words and Pictures: A Test of Samuel's Findings," Journal of Reading Behavior 9 (1978): 269-285.

Psycholinguistic Theory

Psycholinguistic theory brings together the two separate disciplines of cognitive psychology and linguistics to the processes underlying thought and acquisition and use of language. Reading is identified as a receptive language process and has become involved in psycholinguistic studies. Questions studied by psycholinguists were initially linguistic, concerned mainly with language development through syntax and how it is learned and used. The linguists began to question meaning, or the deep structure of language. Psychologists turned their attention to how the information contained in a sentence was cognitively received, processed, stored, and used. Through this direction of interest came attention to the reading process.[26]

Psycholinguistics approaches the reading process through the aspects of visual and nonvisual information. Visual information is the surface structure of the print. It is picked up by the eyes and transmitted to the brain. Nonvisual information, at the deep structure level, refers to the meaning inherent in the language, already located

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[26] Frank Smith, Psycholinguistics and Reading (New York: Holt, Rinehart and Winston, 1973), pp. 2-5.

in the brain of the writer and in the brain of the reader.[27] In other words, one brings meaning to the print, rather than getting meaning from decoded sounds. Readers react with the graphic display with their experiential background of learning. They sample the print to test their hypotheses of what the text is about. The more nonvisual information readers bring to the page, the less information is required to confirm their hypotheses. Likewise, the less nonvisual information readers have about a subject, the more visual information is required. There is a limited amount of visual information the brain can process at a time before the visual system will be overloaded. Readers must learn to utilize the visual information as economically and efficiently as possible through their nonvisual information to reduce their uncertainty about the text.[28]

Goodman used a Chomskian transformation-generative framework of language on which to base his theory of reading.[29] This is the concept of the two levels of

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[27] Ibid., p. 6.

[28] Smith, "Understanding Reading: A Psycholinguistic Analysis," pp. 15-19.

[29] Goodman, "Guessing Game," pp. 130-131.

language, surface structure and deep structure. Surface structure is identified as the ink marks on the page or the sound waves in the air. Deep structure contains the actual meaning of those physical characteristics. These two levels are bridged by the grammar, or syntax, of the language. The syntax of a language is the set of rules which permits the language user to operate between the two levels. It determines the order that the words are organized in a sentence. This is necessary to convey meaning, as a set of words can have different meanings based upon their grammatical function within the sentence; likewise, their grammatical function is determined by their order and relationship to the other words within the sentence.

Goodman describes his theory of reading as a "psycholinguistic guessing game". He proposes that there are three universal systems operating in the generative and receptive aspects of any language. The first is the graphophonic system, in which either a graphic or phonological signal represents the language users' thoughts which they wish to express or generate. This represents the surface structure of the language.

The second cue system is the syntactic, in which pattern markers such as function words and inflectional suffixes are used to recognize and predict the structure of the sentence. These first two systems are part of the receptive language processes, in which readers or listeners sample the surface structure to confirm, alter, or reject their hypotheses or predictions of the meaning of the material, based upon the redundancy of language and knowledge of linguistic constraints. In Goodman's own words, "The language user must not simply know what to pay attention to but what not to pay attention to."[30]

The third cue system is the semantic, in which language users derive meaning based upon their experiential and conceptual background. This represents the deep structure of the language.

Goodman proposed his model of reading based upon this premise. He described the operation of the reading process in this way:

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[30]Kenneth S. Goodman, "Psycholinguistics and Reading," lecture at workshop, University of Oklahoma, 4 June 1979.

1. The reader scans the print from left to right and down the page, line by line.

2. Eyes are focused at selected points on the line of print.

3. The selection process begins. Based upon constraints set up through prior choices, language knowledge, cognitive styles, and learned strategies, the reader picks up graphic cues.

4. A perceptual image is formed using these cues and anticipated cues.

5. Memory is searched for related syntactic, semantic, and phonological cues.

6. A guess or tentative choice consistent with the graphic cues is made. Any meaning generated is stored in short-term memory.

7. If no guess is possible, recalled perceptual input is checked and more graphic cues are gathered.

8. If a decodable guess can be made, it is tested for semantic and grammatical acceptibility within the context of the reading.

9. If the guess is not acceptable semantically or syntactically, the reader regresses to the point of unacceptability and begins again.

10. If the guess is acceptable, the meaning is assimilated with prior meaning, and prior meaning is accommodated. Expectations are formed about the meaning that lies ahead.

11. The cycle continues.[31]

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[31]Goodman, "Guessing Game," pp. 134-135.

Smith and Smith and Holmes agree that comprehension depends upon getting an answer to questions asked, or in other words, getting answers to predictions. They have operationally defined meaning as "the reduction of uncertainty".[32] Readers reduce their uncertainty by eliminating those alternatives which are unlikely, based upon their prior expectations and knowledge of language.

Miscue Analysis

Goodman has outlined a taxonomy through which he set a theoretical framework to view the reading process from a psycholinguistic point of view.[33] Miscue analysis is one of the techniques of applied psycholinguistics in which the interaction of the reader with written language can be studied as an attempt is made to reconstruct from the print the meaning conveyed by the author.

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[32]Smith, "Understanding Reading: Psycholinguistic Analysis," p. 16; and Frank Smith and Deborah L. Holmes, "The Independence of Letter, Word, and Meaning Identification in Reading," Reading Research Quarterly 6, 3 (1971), p. 403.

[33]Kenneth S. Goodman, "Analysis of Oral Reading Miscues: Applied Psycholinguistics," Reading Research Quarterly 5, 1 (1969): 9-29.

Goodman prefers to call deviations from the written text, or the expected response, "miscues" rather than errors. He believes that all miscues are the result of the operation of the same cognitive processes that produce expected responses. Furthermore, Goodman wished to get away from the stigma of being wrong which is associated with the word "error". He emphasizes that even good reading includes miscues.

In her survey of the literature, Weber traced the history of the analysis of oral reading errors to determine the strategies employed by readers, both for insight into the nature of the reading process and for diagnosis of reading difficulties. She classified her findings into those two schools of thought with two distinctive concerns.[34]

The investigators who dealt primarily with diagnosing weaknesses for the purpose of providing a starting point for remedial instruction were dealing primarily with disabled readers. Monroe and Gates viewed

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[34]Rose Marie Weber, "The Study of Oral Reading Errors: A Survey of the Literature," Reading Research Quarterly 4, 1 (1968): 96-119.

oral reading errors as signs of imperfect learning which needed to be remediated.[35]

The second school of thought has dealt primarily with those errors made by successful readers as they mature. Goodman and Burke describe this as a window through which one can view the nature of the reading process.[36] The Goodman miscue analysis research, which began in 1963, initiated the intensive studies into the grammatical constraints of the language and the effect of miscue upon the meaning of a sentence or passage. This emphasis has been upon words as linguistic units expressed graphically and upon the readers' knowledge of the grammatical structure of their language during reading.[37]

As Weber pointed out, error classifications were too imprecise or too dissimilar to permit valid cross-

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[35] Marion Monroe, Children Who Cannot Read (Chicago: University of Chicago Press, 1932); and Arthur Gates, The Improvement of Reading (New York: MacMillan Company, 1935).

[36] Goodman and Burke, Reading Miscue Inventory Manual, p. 15.

[37] Kenneth S. Goodman, "A Linguistic Study of Cues and Miscues in Reading," Elementary English 42 (October 1965): 639-649.

study comparisons in the more than 30 studies she reviewed.[38] Those studies differed in ages of the subjects, differences in materials and methods of presenting them, and unlike as well as overlapping categories.

Studies have been conducted in error or miscue analysis which have dealt in depth with oral reading rate, such as those by Berends and Packman,[39] the effect of grade level variations, such as those of Goodman, Ilg and Ames, Menosky, Page, Powell, and Tatham;[40] sex, such as

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[38] Weber, "Study of Oral Reading Errors," pp. 96-119.

[39] Margery L. Berends, "An Analysis of Error Patterns, Rates and Grade Equivalent Scores on Selected Reading Measures at Three Levels of Performance," (Ed.D. dissertation, Oklahoma State University, 1971); and Linda Arlene Packman, "Relationships Between Selected Measures of Behavior and Levels of Reading Comprehension for Good, Average, and Poor Readers" (Ed.D. dissertation, University of Pennsylvania, 1970).

[40] Goodman, "Linguistic Study of Cues and Miscues;" F. L. Ilg and L. B. Ames, "Developmental Trends in Reading Behavior," Journal of Genetic Psychology 76 (1950): 291-312; D. M. Menosky, "A Psycholinguistic Analysis of Oral Reading Miscues Generated During the Reading of Varying Portions of Text by Selected Readers from Grades Two, Four, Six and Eight: A Descriptive Study" (Ed.D. dissertation, Wayne State University, 1971), Dissertation Abstracts International 32, 6108A (1972); W. D. Page, "A Psycholinguistic Description of Patterns of Miscues Generated by a Proficient Reader in Second Grade, An Average Reader in Fourth Grade, and an Average Reader in Sixth Grade Encountering Ten Basal Reader Selections Ranging From Pre-primer to Sixth Grade" (Ed.D. dissertation, Wayne State University, 1970),

that by Schummers;[41] and reading level, such as that of Christenson.[42]

Other studies in error or miscue analysis have delved into differing instructional backgrounds, such as the one by Herlin;[43] and into differing reading backgrounds, such as those by Sims and Thornton.[44]

Dissertation Abstracts International 31, 235A-236A (1970); William R. Powell, "The Validity of the Instructional Reading Level," in Diagnostic View Points in Reading, ed. R. E. Leibert (Newark, Delaware: International Reading Association, 1971); and Susan Masland Tatham, "Reading Comprehension of Materials Written with Select Oral Language Patterns: A Study at Grades Two and Four," Reading Research Quarterly 5 (Spring 1970): 402-426.

[41] John L. Schummers, "Word Pronunciation in the Oral Sight-Reading of Third-Grade Children" (Ph.D. dissertation, University of Minnesota, 1956).

[42] A. Adolph Christenson, "A Diagnostic Study of Oral Reading Errors of Intermediate Grade Children at Their Independent, Instructional, and Frustration Reading Levels" (Ed.D. dissertation, Colorado State College, 1966).

[43] Wayne Richard Herlin, "A Comparison of Oral Reading Errors on the Monroe Diagnostic Reading Examination and the Durrell Analysis of Reading Difficulty" (Ph.D. dissertation, University of Utah, 1963), Dissertation Abstracts International , (1964), p. 4084.

[44] R. A. Sims, "A Psycholinguistic Description of Miscues Generated by Selected Young Readers During the Oral Reading of Text Material in Black Dialect and Standard English" (Ed.D. dissertation, Wayne State University, 1972), Dissertation Abstracts International 33, 2089A (1972); and M. F. Thornton, "A Psycholinguistic Description of Purposive Oral Reading and Its Effect on Comprehension for Subjects

Differences in miscuing by those of varying reading abilities were described by Davey, Hatch and Sheldon, Packman, Page, Rousch and Cambourne, and Stafford.[45] Age differences in miscues were described by Anderson, who concluded that the greatest chance of achieving initial reading success would be provided through use of the reader's natural language.[46]

With Different Reading Backgrounds" (Ed.D. dissertation, Wayne State University, 1973), Dissertation Abstracts International 34, 3854A-3855A (1974).

[45]B. A. Davey, "A Psycholinguistic Investigation of Cognitive Styles and Oral Reading Strategies in Achieving and Underachieving Fourth Grade Boys," Dissertation Abstracts International 32, 4414A (1972); Shirley Hatch and William D. Sheldon, "Strengths and Weaknesses in Reading of a Group of Fourth Grade Children," Elementary English 27 (April 1950): 254-260; Packman, "Relationships Between Good, Average and Poor Readers;" Page, "Patterns of Miscues Generated by Proficient Reader;" P. D. Rousch and B. L. Cambourne, A Psycholinguistic Model of the Reading Process as it Relates to Proficient, Average, and Low Ability Readers (Wagga Wagga, N.S.W., Australia: Riverina College of Advanced Education, 1979); and Clarice M. Salli Stafford, "An Analysis of the Types of Oral Reading Errors in a Sample of Fourth Grade Pupils" (Ed.D. dissertation, Wayne State University, 1967), Dissertation Abstracts International 1375A-1376A (1968).

[46]D. J. Anderson, "A Psycholinguistic Description of the Oral Reading Miscues of Selected First Grade Students Participating in a Supplemental Language Based Program" (Ed.D. dissertation, Virginia Polytechnic Institute and State University, 1974), Dissertation Abstracts International 35, 2755A-2756A (1974).

This variable was also studied by Burke, who studied grammatical restructuring of sixth graders;[47] by Y. Goodman, who studied young beginning readers;[48] by Hayden, who studied seventh graders;[49] and by Russell, who studied functionally illiterate adults.[50]

Other researchers have used differing types and structure of textual materials. Included in this area of error or miscue analysis have been studies by Berends,

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[47]Carolyn L. Burke, "A Psycholinguistic Description of Grammatical Restructuring in the Oral Reading of a Selected Group of Middle School Children" (Ed.D. dissertation, Wayne State University, 1969), Dissertation Abstracts International 30, 3851A (1970).

[48]Yetta M. Goodman, "A Psycholinguistic Description of Observed Oral Reading Phenomena in Selected Young Beginning Readers" (Ed.D. dissertation, Wayne State University, 1967), Dissertation Abstracts International 29, 60A (1968).

[49]J. B. Hayden, "Psycholinguistic Analysis of Oral Reading of Three Selected Groups of Seventh Grade Students" (Ed.D. dissertation, University of Southern California, 1974), Dissertation Abstracts International 34, 7101A (1974).

[50]Sheldon Noel Russell, "Error Pattern Relationship of Developmental Readers and Functionally Illiterate Adults" (Ed.D. dissertation, Oklahoma State University, 1973).

Burke, Carlson, Goodman, Goodman and Burke, Kolczynski, and Martellock.[51] Stuever studied the length of the passage needed to generate miscues.[52]

Consideration of the syntactic acceptability of the miscue has been given in studies by Allen, Burke,

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[51]Berends, "Error Patterns at Three Levels,"; Burke, "Psycholinguistic Description of Selected Middle School Children;" K. L. Carlson, "A Psycholinguistic Description of Selected Fourth Grade Children Reading a Variety of Contextual Materials (Ed.D. dissertation, Wayne State University, 1970), Dissertation Abstracts International 32, 158A-159A (1971); Goodman, "Linguistics Study of Cues and Miscues;" U. S., Office of Education, "Study of Children's Behavior While Reading Orally," by Kenneth S. Goodman and Carolyn L. Burke, Final Report, Project No. 5425 (Detroit: Wayne State University, 1967); R. G. Kolczynski, "A Psycholinguistic Analysis of Oral Reading Miscues in Selected Passages from Science, Social Studies, Mathematics, and Literature" (Ph.D. dissertation, Ohio State University, 1973), Dissertation Abstracts International 34, 7108A (1974); and H. A. Martellock, "A Psycholinguistic Description of the Oral and Written Language of a Selected Group of Middle School Children" (Ed.D. dissertation, Wayne State University, 1971), Dissertation Abstracts International 32, 6107A-6108A (1972).

[52]Rita Fae Stuever, "Analysis of Relationship of Length of Passage to Categories of Oral Reading Errors" (Ed.D. dissertation, Oklahoma State University, 1969).

Christenson, Clay, Goodman and Burke, and Y. Goodman.[53] Nurss studied sentence complexity,[54] and Goodman and Burke studied the semantic acceptability of the miscues.[55]

Kaplan studied the personality dimension of manifest anxiety as it was related to oral miscuing.[56]

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[53] Paul D. Allen, "A Psycholinguistic Analysis of the Substitution Miscues of Selected Oral Readers in Grades Two, Four, and Six, and the Relationship of these Miscues to the Reading Process: A Descriptive Study (Ed.D. dissertation, Wayne State University, 1969); Burke, "Grammatical Restructuring of Selected Middle School Children;" Christenson, "Reading Errors at Independent, Instructional, and Frustration Levels;" Marie M. Clay, "A Syntactic Analysis of Reading Errors," Journal of Verbal Learning and Verbal Behavior 7 (1968), pp. 434-438; Goodman and Burke, "Children's Behavior;" and Goodman, "Observed Phenomena in Young Beginning Readers."

[54] Joanne R. Nurss, "Oral Reading Errors and Reading Comprehension," Reading Teacher 22 (March, 1969), pp. 523-527.

[55] K. S. Goodman and C. L. Burke, Theoretically Based Studies of Patterns of Miscues in Oral Reading Performance: Final Report (Detroit, Mich.: ERIC Document Reproduction Service, ED 079708, 1973).

[56] E. M. Kaplan, "An Analysis of the Oral Reading Miscues of Selected Fourth Grade Boys Identified as Having High or Low Manifest Anxiety" (Ph.D. dissertation, Hofstra University, 1973), Dissertation Abstracts International 35, 4253A (1975).

The impulsive and reflective cognitive style was studied as it related to oral reading behaviors of children by Butler, Davey, Lesiak, Readence, and Storer.[57]

Summary

The review of the literature included in this chapter provided background information and research findings relative to the cognitive control dimension of distractibility and psycholinguistic cueing systems. A review of cognitive style and cognitive control theory, distractibility as it is related to reading, psycholinguistic theory, and miscue analysis was presented.

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[57] L. G. Butler, "A Psycholinguistic Analysis of the Oral Reading Behavior of Selected Impulsive and Reflective Second Grade Boys" (Ph.D. dissertation, Ohio State University, 1972), Dissertation Abstracts International 33, 5960A (1973); Davey, "Styles and Strategies in Achieving and Underachieving Boys;" J. F. L. Lesiak, "The Relationship of the Reflection-Impulsivity Dimension and the Reading Ability of Elementary School Children at Two Grade Levels" (Ph.D. dissertation, Ohio State University, 1970), Dissertation Abstracts International 32, 244A (1971); John E. Readence, "A Psycholinguistic Analysis of the Oral Reading Miscues of Impulsive and Reflective Third Grade Children" (Ph.D. dissertation, Arizona State University, 1975); and Eldon Lee Storer, "The Interrelationships of Reflection-Impulsivity, Automatization, and Risk-Taking with Speed and Errors of Oral Reading of Fourth Grade Students" (Ed.D. dissertation, University of Kansas, 1975).

Cognitive controls were differentiated from cognitive styles in that several of the cognitive control dimensions might be combined to form a unique cognitive style for each individual. These controls work together to represent an individual's customary way of facing reality. One might deploy whichever control is perceived to be relevant to the situational requirement. Behavior might be predicted from the composite of controls within a person, as they are thought to work together to produce consistencies in perceptual, memory, thinking, and motoric activities.

The cognitive control of distractibility was defined as the relatively consistent way in which persons manage distracting information. Some are able to withhold their attention from irrelevant information and direct their attention only to that which is relevant. Others attend to all information equally, whether it is relevant or irrelevant. Two studies were cited which have investigated the relationship of this cognitive control to reading. Both found that it distinguished remedial readers from normal readers. Other researchers have studied distractibility as a component of attention, leading this investigator to generalize that remedial readers are more highly distracted by irrelevant information than good readers.

Psycholinguistic theory brings together the two separate disciplines of psychology and linguistics to view the reading process. Readers bring meaning to the printed page through the visual and nonvisual information at the surface and deep structure levels of language bridged by its syntax, or grammar. Readers selectively sample the relevant print to confirm, refine, or reject previously formed hypotheses of what the text is about. They use linguistic cueing systems, graphophonic, syntactic, and semantic, to provide this information.

Miscue analysis is described as a technique of applied psycholinguistics in which the reader's attempt to reconstruct meaning from a printed passage can be studied. Miscue analyses have been conducted in varying areas such as oral reading rate, the effect of grade level and reading ability variations, sex, differing instructional or reading backgrounds, age differences, differing types and structure of textual materials, syntactic and semantic acceptability of miscues, personality dimensions, and the impulsive-reflective dimension of cognitive style.

In summary, numerous studies have been conducted using a psycholinguistic analysis of oral reading miscues,

and numerous researchers have studied dimensions of cognitive controls or styles. No studies have been found which compared the effect of the cognitive control of distractibility upon the oral reading behavior of remedial readers.

CHAPTER III

DESIGN AND PROCEDURES

The problem considered in the study was to determine the relationship between remedial reading students' cognitive control of distractibility and their ability to use psycholinguistic cueing systems in reconstructing meaning from print. In the search of the literature, no studies were found which compared the effect of the cognitive control of distractibility upon the oral reading behavior of remedial readers.

The material in this chapter is divided into five sections. The first section describes the results of a pilot study. Section two is concerned with the size and nature of the sample. A description of the instruments used in this study is given in the third section. The fourth section presents the methodology involved in the collection of the data. The fifth section describes the procedures used in the analysis of the data.

The Pilot Study

A pilot study was conducted during the spring semester of 1979. Those children referred to the Reading Clinic of Central State University for diagnosis of reading difficulties and evaluated by this investigator were used as subjects of the pilot study. Each subject was individually administered the Standard Reading Inventory and the Fruit Distraction Test. The student was then asked to read orally a selection from the Reading Miscue Inventory based upon the instructional level established on the Standard Reading Inventory.

The pilot study was undertaken in order to make a thorough check of the three testing instruments for any unforseen problems that might be presented during their administration. Subjects responded well to the testing instruments and the testing situation. No difficulties were encountered in the administration of the instruments. There were no problems analyzing the Fruit Distraction Test. The analysis of the reading selections of both the Standard Reading Inventory and the Reading Miscue Inventory introduced an element of subjectivity into the study. It was realized that the analysis of the miscues in the RMI was a more demanding and lengthy task than

anticipated. Descriptive statistics were computed for the effect of intermediate grade level and distractibility upon graphic similarity, sound similarity, syntactic acceptability, and semantic acceptability. These data are included in Tables 1 through 4.

The Sample

The subjects for this research study were chosen from the ninety-eight students who were enrolled in the public school summer program in a city in Central Oklahoma with approximately 13,000 regularly enrolled students. The students are primarily Caucasian. Approximately 12-15% of the enrollment are Native Americans; .001% are Mexican Americans; and .0001% are Black. They are representative of all socioeconomic levels, primarily middle and lower status.

Potential remedial readers were selected from the results of a group silent reading test administered to all students the first day of summer school classes. Those students who scored below their grade placement were then contacted for further testing for this investigation.

Remedial readers were identified by their performance on the Standard Reading Inventory. Those students

TABLE 1

MEANS FOR LOW DISTRACTIBILITY REMEDIAL READERS IN ORAL READING TASK

SOURCE	MEAN	N *
Graphic Similarity	.69	1
Sound Similarity	.69	1
Syntactic Acceptability	.68	1
Semantic Acceptability	.62	1

* N = Subjects

TABLE 2

MEANS AND STANDARD DEVIATIONS FOR HIGH DISTRACTIBILITY REMEDIAL READERS IN ORAL READING TASK

SOURCE	MEAN	S.D.	N *
Graphic Similarity	.72	.11	2
Sound Similarity	.67	.11	2
Syntactic Acceptability	.64	.23	2
Semantic Acceptability	.41	.07	2

* N = Subjects

TABLE 3

MEANS AND STANDARD DEVIATIONS FOR INTERMEDIATE GRADE LEVEL REMEDIAL READERS IN ORAL READING TASK

SOURCE	MEAN	S.D.	N*
Graphic Similarity	.70	.08	3
Sound Similarity	.67	.08	3
Syntactic Acceptability	.65	.16	3
Semantic Acceptability	.48	.13	3

* N = Subjects

TABLE 4

MEANS AND STANDARD DEVIATIONS FOR DISTRACTIBILITY SCORES FOR REMEDIAL READERS

SOURCE	MEAN	S.D.	N*
Low Distractibility			
Time in seconds	-3.00		1
Errors	-4.00		1
High Distractibility			
Time in seconds	8.00	5.65	2
Errors	1.50	0.71	2
Intermediate Grade Level			
Time in seconds	4.33	7.50	3
Errors	-0.33	3.21	3

* N = Subjects

completing grades one, two, and three who obtained an instructional reading level .5 reading level or more below their grade placement, and those students completing grades four, five, and six who obtained an instructional reading level 1.0 or more levels below their grade placement became the thirty-two subjects of this research study. Sixteen subjects were classified as primary grade students (Grades 2.0 - 4.0), and sixteen subjects were classified as intermediate grade students (Grades 5.0 - 7.0).

Description of Instruments

The instruments used in this study were the Standard Reading Inventory (SRI), the Fruit Distraction Test (FDT), and the Reading Miscue Inventory (RMI). The SRI assessed the instructional reading level of each subject. Distractibliity was measured by the FDT. The RMI is a psycholinguistic tool used to analyze the oral reading performance.

Standard Reading Inventory (SRI), Form A (1966)

The instrument is an individually administered reading inventory to assess independent, instructional, and frustration level in reading. This test was used to

screen those primary students whose reading instructional level was .5 year or more below their grade placement and those intermediate students whose reading instructional level was 1.0 year or more below their grade placement. Reading achievement can be measured with this instrument at pre-primer through seventh reader levels. Each of the two forms has eleven stories for oral reading and eight for silent reading. The length of the stories varies from forty-seven words to one hundred fifty-one words. Each story is followed by ten comprehension questions.

Content validity was obtained by constructing the test so that vocabulary was controlled. It was based upon words introduced at or before the level of the story in the basal reading series of Allyn and Bacon, Ginn, and Scott-Foresman. Sentence length and style were based upon the three basal reading series. The Spache Readability Formula and the Dale-Chall Formula for Predicting Readability were used in analyzing the stories.

Content validity was corroborated by administering the test to 664 children in grades one through six. It was further corroborated by replies received from twenty-five

experts who evaluated Forms A and B. "The rank correlation between experts' ratings and Standard Reading Inventory book levels was 0.994 for Form A and 0.993 for Form B."[1]

Two concurrent validity studies were made. One compared the instructional reading level of the Standard Reading Inventory to the California Reading Test for seventy-nine children completing second grade. Results were correlated at 0.87. A second study compared the instructional reading level and vocabulary measures of the Standard Reading Inventory to the Stanford Achievement Tests for seventy-seven children completing third grade. Results were correlated at 0.77 for the comprehension analysis and at 0.88 for the vocabulary measures.[2]

The Reading Miscue Inventory (RMI)

The Reading Miscue Inventory (RMI) is a diagnostic instrument which results in a qualitative analysis of reading proficiency. Based upon the assumption that miscues are cued by the thought and language of readers in their

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[1]McCracken, Manual, p. 42.

[2]Ibid., pp. 42-43.

attempt to extract meaning, the RMI provides a psycholinguistically based theoretical framework from which to view the reading process as a selection is orally read. A series of nine questions are used to determine the quality and variety of the miscues.

The inventory consists of a series of extended oral passages from materials intended to be unfamiliar to the reader. However, the selection should contain concepts and situations from which the reader can draw upon his background of experiences. This investigator used the Spache Readability Formula[3] to analyze the RMI stories written for reading levels 1-3. The Dale-Chall Formula for Predicting Readability[4] was used to analyze those stories written for reading levels four through six. These formulas were selected so that the levels would compare in readability with equivalent passages of the instructional levels on the Standard Reading Inventory.

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[3]G. Spache, "A New Readability Formula for Primary-Grade Reading Materials," Elementary School Journal 53 (1953): 410-413.

[4]E. Dale and J. Chall, "A Formula for Predicting Readability," Educational Research Bulletin 18 (21 Jan. 1948), pp. 18, 16-20 (18 Feb. 1948), pp. 28, 37-54.

Readability levels for the stories range from approximately the end of the first grade through the eighth grade.

The student is asked to read from a printed text challenging enough to generate miscues, while the investigator records the miscues on another copy of the selection. The reading is also recorded on audio tape for future reference and analysis. The reader is instructed to read the story aloud into the tape recorder. No help can be given during the reading, even though there are words which will give problems. Any known reading strategies can be used, guesses can be made, or the material can be skipped.

Miscues are then coded to determine the degree of similarity and acceptability of the miscue in response to the RMI questions:

1. DIALECT: Is a dialect variation involved in the miscue?

2. INTONATION: Is a shift in intonation involved in the miscue?

3. GRAPHIC SIMILARITY: How much does the miscue look like what was expected?

4. SOUND SIMILARITY: How much does the miscue sound like what was expected?

5. GRAMMATICAL FUNCTION: Is the grammatical function of the miscue the same as the grammatical function of the word in the text?

6. CORRECTION: Is the miscue corrected?

7. GRAMMATICAL ACCEPTABILITY: Does the miscue occur in a structure which is grammatically acceptable?

8. SEMANTIC ACCEPTABILITY: Does the miscue occur in a structure which is semantically acceptable?

9. MEANING CHANGE: Does the miscue result in a change of meaning?[5] (See Appendix B)

The coded results may be transferred to the RMI Reader Profile to chart the actual pattern of strengths and weaknesses in reading. The linguistic strategies the reader used to reconstruct meaning can be determined.

Fruit Distraction Test (FDT)

The Fruit Distraction Test is individually administered to assess the cognitive control of distractibility with children. The FDT has been used with children from the ages of three to fifteen years. The test was designed by Sebastiano Santostefano, a clinical child psychologist at McLean Hospital and Children's Center at Harvard Medical School. He uses the instrument to assess

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[5]Goodman and Burke, Manual, pp. 49-59.

the cognitive control principle of field articulation. Denney used the instrument to measure his construct "constricted-flexible" control.[6] Two criteria, reading time distractibility and reading error distractibility, were recorded for this study. (See Appendix C)

In his latest work, Santostefano devoted an entire chapter to consideration of studies that related directly to the issue of criterion validity and reliability of the tests of cognitive controls.[7] Studies which explored the relations between the FDT and tests of other cognitive functions revealed patterns of relations that support their validity. Studies which correlated the FDT with teacher ratings of inattentive and attentive classroom behavior added further validating support. Studies also correlated the FDT with various populations (public school, orphaned, and brain-damaged children), to support the validity of the test as measuring consistent cognitive strategies used to process information. Other studies suggested that the FDT does not measure what tests of intelligence and academic skills measure.

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[6]Denney, "Relationship of Three Style Dimensions," pp. 702-709.

[7]Santostefano, Biodevelopmental Approach, pp. 192-272.

Evidence of reliability of the FDT was offered by consideration of differences between reading distractibility times on Cards III-II and Cards IV-II. This purports to measure consistency of performance with two different types of distraction, or an alternate form of the distraction card. Santostefano related several studies to provide information about the consistencies of the performance observed between Cards III-II and Cards IV-II:

1. Subjects were 150 kindergarten children judged by their teachers to be typical and 34 judged to be at risk academically. Correlations between the cards were: .58 and .71, respectively.

2. Subjects were 108 kindergarten children judged by their teachers to be typical and 56 judged to be at risk academically. Correlations between the cards were .46 and .54.

3. Subjects were 65 third and fourth grade public school children. Correlation was .44.

4. Subjects were 60 third and fourth grade public school children. Correlation was .51.

5. Subjects were 166 children hospitalized for psychiatric purposes. Correlation was .40.

All correlations were statistically significant.[8]

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[8]Ibid., pp. 265-266.

Santostefano notes that the studies using the Fruit Distraction Test

> . . . were conducted in several geographic areas in the United States (Midwestern urban and rural areas; Eastern urban and suburban areas), with several SES levels (low, middle, and high) with both black and white children, and with children of several ethnic backgrounds.[9]

Data Collection

Training of Examiners and Monitoring the Study

A meeting was scheduled with the examiners who assisted with the study for the purpose of coordinating the practices which were to be used in collecting the data. Five doctoral students in Reading Education at The University of Oklahoma, all of whom are certified Reading Specialists in the State of Oklahoma, participated in the training session. The purpose and use of each of the instruments as they related to the theory of the study were discussed by the investigator, who demonstrated the Standard Reading Inventory and the Fruit Distraction Test. A faculty member in Reading Education instructed the examiners in the administration of the

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[9]Ibid., p. 262.

Reading Miscue Inventory. Copies of each of the tests and instructions were provided, and an RMI analysis was completed by the examiners from a demonstration tape.

Daily conversations with the participating examiners were initiated by the investigator for the duration of the data collection. Coordinating efforts were handled by the researcher, who made the appointments for the time for each subject to be tested and received each student upon arrival at the testing site. The investigator was available for answering the examiners' questions pertaining to the administration of the tests as they arose.

Methodology

The examiners administered the Standard Reading Inventory to all subjects to determine their instructional reading level. Those primary students who were reading .5 levels or more below their grade levels and those intermediate students who were reading one level or more below their grade level were then given the Fruit Distraction Test. Thirty-two subjects, sixteen at each grade level, were thus identified. A story from the Reading Miscue Inventory was selected to correspond to the previously established

instructional level. Readability of the stories had been previously determined by the investigator. The oral reading of the selection was taped to insure proper analysis.

Response latency times on the FDT (Tests III-II) were calculated for each subject and medians were computed. Latency times between one through three seconds were determined to be a buffer zone. On the basis of that information, thirteen subjects were classified as high distractibility, four indeterminate distractibility, and fifteen as low distractibility.

Using the procedure outlined in the RMI, miscues from the oral readings were coded and examined for their degree of graphic similarity, sound similarity, syntactic acceptability, and semantic acceptability. To provide a measure of reliability, four examiners evaluated five segments each of five randomly selected taped readings. The resulting coefficients were adjusted by the Spearman-Brown Prophecy Formula, as described by Winer.[10] Interrater reliability was .817 for graphic similarity miscues, .730 for sound similarity miscues, .908 for syntactic acceptability

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[10]B. J. Winer, Statistical Principles in Experimental Design (New York: McGraw-Hill Book Company, 1962), p. 136-138.

miscues, and .928 for semantic acceptability miscues.

Data Analysis

Data were analyzed in a two by two (2 x 2) multivariate analysis of variance (MANOVA) with four dependent measures: graphic similarity, sound similarity, snytactic acceptability, and semantic acceptability of the oral reading miscues. The independent measures were reading time distractibility and primary and intermediate grade levels. The following is a schematic representation of the design:

	HIGH DISTRACTIBILITY	LOW DISTRACTIBILITY
PRIMARY	LINGUISTIC STRATEGIES (4 criteria)	
INTER-MEDIATE		

The data were examined by means of multivariate analysis of variance because there was more than one dependent variable for each subject. The null hypotheses specified in Chapter I were tested using the Statistical

Analysis System (SAS) for data management and statistical analysis subprogram ANOVA Procedure (analysis of variance).[10] The resulting F ratios were tested at the .05 level of significance. The program was processed using the computer and facilities of the Merrick Computing Center at The University of Oklahoma.

Summary

A pilot study was conducted in the spring of 1979 to determine the appropriateness of the instruments to be used in the study. No major problems were encountered. Means and standard deviations revealed a difference in the degree in use of the semantic acceptability of the miscues when compared to the other cueing systems. A greater degree of graphic and sound similarity and syntactic acceptability of the miscues was in use than in the semantic acceptability of the miscues.

Thirty-two remedial reading students, sixteen at the primary level and sixteen at the intermediate level, were selected as subjects for this study from a public school

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[10] A. J. Barr, J. H. Goodnight, J. P. Sall, and J. T. Helwig, A User's Guide to SAS (Raleigh, N.C.: SAS Institute, 1976), pp. 57-65.

summer reading program. Initially screened for instructional level on the Standard Reading Inventory, each subject was administered the Fruit Distraction Test and the Reading Miscue Inventory. Medians for the distractibility times were computed to classify the subjects as high or low distractibility. Miscues generated from the Reading Miscue Inventory were coded and examined for their degree of graphic and sound similarity and syntactic and semantic acceptability.

The data which was generated were analyzed by means of a multivariate analysis of variance. The SAS computer subprogram ANOVA Procedure processed the data. Analysis and interpretation of this data will be presented in Chapter IV.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

The purpose of this study was to investigate the relationship between remedial reading students' cognitive control of distractibility and their ability to use psycholinguistic cueing systems in reconstructing meaning from print. Students who had completed grades one, two, and three were classified as primary grade subjects. Those remedial students who had completed grades four, five, and six were classified as intermediate grade subjects.

Raw scores of thirty-two subjects were generated as response latency times on the Fruit Distraction Test (Tests III-II times) as a measure of reading time distractibility. The range of time distractibility scores was used to compute the median. A buffer zone of 1-3 seconds eliminated four subjects, who were classified as indeterminate distractibility. Subjects above the upper limits of the zone were classified as high distractibility. Subjects below the lower limits of the zone

were classified as low distractibility.

Miscues generated from the Reading Miscue Inventory were coded and examined for their degree of graphic similarity, sound similarity, syntactic acceptability, and semantic acceptability. A score with a range of 0-1 was computed for each of the four dependent variables. This reflected the proportion of high similarity or acceptability plus a fraction (half) of the some similarity or partial acceptability relative to the total number of observations of each variable. The closer the subject's score was to 1 reflected higher use of graphic, sound, syntactic, or semantic cues.

The null hypotheses formulated for this study tested the overall grade level effect, the overall distractibility effect, and the overall interaction between grade level and distractibility upon psycholinguistic cueing systems of remedial readers. Descriptive statistics were computed for the main effect of the two independent variables (grade level and distractibility) upon each of the four dependent variables (graphic similarity, sound similarity, syntactic acceptability, and semantic acceptability). These data are included in Tables 5 through 8.

TABLE 5

MEANS AND STANDARD DEVIATIONS FOR GRAPHIC SIMILARITY SCORES IN ORAL READING TASK BY REMEDIAL READERS

	HIGH DISTRACTIBILITY	LOW DISTRACTIBILITY	
PRIMARY	MEAN = .54 S.D. = .10 (N=6)	MEAN = .75 S.D. = .08 (N=7)	MEAN = .65 S.D. = .09 (N=13)
INTER-MEDIATE	MEAN = .69 S.D. = .17 (N=7)	MEAN = .60 S.D. = .12 (N=8)	MEAN = .64 S.D. = .145 (N=15)
	MEAN = .62 S.D. = .14 (N=13)	MEAN = .67 S.D. = .10 (N= 15)	GRAND MEAN = .65 S.D. = .12 (N=28)

TABLE 6

MEANS AND STANDARD DEVIATIONS FOR SOUND SIMILARITY SCORES IN ORAL READING TASK BY REMEDIAL READERS

	HIGH DISTRACTIBILITY	LOW DISTRACTIBILITY	
PRIMARY	MEAN = .55 S.D. = .10 (N=6)	MEAN = .68 S.D. = .12 (N=7)	MEAN = .62 S.D. = .125 (N=13)
INTER-MEDIATE	MEAN = .63 S.D. = .17 (N=7)	MEAN = .56 S.D. = .13 (N=8)	MEAN = .59 S.D. = .15 (N=15)
	MEAN = .59 S.D. = .14 (N=13)	MEAN = .62 S.D. = .14 (N=15)	GRAND MEAN = .61 S.D. = .14 (N=28)

TABLE 7

MEANS AND STANDARD DEVIATIONS FOR SYNTACTIC ACCEPTABILITY SCORES IN ORAL READING TASK BY REMEDIAL READERS

	HIGH DISTRACTIBILITY	LOW DISTRACTIBILITY	
PRIMARY	MEAN = .64 S.D. = .15 (N= 6)	MEAN = .72 S.D. = .07 (N= 7)	MEAN = .65 S.D. = .11 (N=13)
INTER-MEDIATE	MEAN = .74 S.D. = .10 (N= 7)	MEAN = .73 S.D. = .10 (N= 8)	MEAN = .735 S.D. = .10 (N=15)
	MEAN = .69 S.D. = .13 (N=13)	MEAN = .72 S.D. = .087 (N=15)	GRAND MEAN = .71 S.D. = .11 (N=28)

TABLE 8

MEANS AND STANDARD DEVIATIONS FOR SEMANTIC ACCEPTABILITY SCORES IN ORAL READING TASK BY REMEDIAL READERS

	HIGH DISTRACTIBILITY	LOW DISTRACTIBILITY	
PRIMARY	MEAN = .33 S.D. = .09 (N=6)	MEAN = .42 S.D. = .16 (N=7)	MEAN = .38 S.D. = .14 (N=13)
INTER-	MEAN = .46 S.D. = .15 (N=7)	MEAN = .52 S.D. = .17 (N=8)	MEAN = .49 S.D. = .16 (N=15)
	MEAN = .40 S.D. = .14 (N=13)	MEAN = .47 S.D. = .17 (N=15)	GRAND MEAN = .44 S.D. = .15 (N=28)

A two-way analysis of variance (ANOVA) was computed to compare variances among grade level, distractibility, and the interaction (grade level x distractibility) upon each of the cueing systems. A multivariate analysis of variance (MANOVA) was employed to test the criteria for overall grade level effect, overall distractibility effect, and overall interaction (grade level x distractibility). The .05 level of significance was adopted for rejection of the null hypotheses. Main effects and interaction were not rejected in this analysis.

Testing Hypotheses H_{01} - H_{04}

A two-way analysis of variance was used to test for hypotheses H_{01} - H_{04}, which are:

H_{01}: There are no significant differences between high and low distractibility levels in graphic similarity of miscues by remedial readers.

H_{02}: There are no significant differences between high and low distractibility levels in sound similarity of miscues by remedial readers.

H_{03}: There are no significant differences between high and low distractibility levels in syntactic acceptability of miscues by remedial readers.

H_{04}: There are no significant differences between high and low distractibility levels in semantic acceptability of miscues by remedial readers.

No F values for the distractibility effect were significant at the .05 level of significance. Therefore, hypotheses H_{01} - H_{04} failed to be rejected. There were no significant differences between distractibility levels and psycholinguistic cueing systems of remedial readers.

Testing Hypotheses H_{05} - H_{08}

A two-way analysis of variance was used to test for hypotheses H_{05} - H_{08}, which are:

H_{05}: There are no significant differences between primary and intermediate remedial readers' scores on graphic similarity

of miscues.

H_{06}: There are no significant differences between primary and intermediate remedial readers' scores on sound similarity of miscues.

H_{07}: There are no significant differences between primary and intermediate remedial readers' scores on syntactic acceptability of miscues.

H_{08}: There are no significant differences between primary and intermediate remedial readers' scores on semantic acceptability of miscues.

No F values for the grade level effect were significant at the .05 level of confidence. Therefore, hypotheses H_{05} - H_{08} failed to be rejected. There were no significant differences between grade levels and psycholinguistic cueing systems of remedial readers.

Testing Hypotheses H_{09} - H_{012}

A two-way analysis of variance was used to test

for hypotheses H_{09} - H_{012}, which are:

H_{09}: There is no significant interaction between grade level and distractibility index on graphic similarity of miscues by remedial readers.

H_{010}: There is no significant interaction between grade level and distractibility index on sound similarity of miscues by remedial readers.

H_{011}: There is no significant interaction between grade level and distractibility index on syntactic acceptability of miscues by remedial readers.

H_{012}: There is no significant interaction between grade level and distractibility index on semantic acceptability of miscues by remedial readers.

Only the F value for the interaction between the grade level and the distractibility index upon the

graphic similarity of miscues by remedial readers was significant at the .05 level of significance. Therefore, hypothesis H_{09} was rejected. These data are included in Tables 9 and 10. Hypotheses H_{010} - H_{012} failed to be rejected. There is a significant interaction present in this study between the grade level and the distractibility index on graphic similarity of miscues by remedial readers. There were no significant interactions between grade levels and distractibility indices on sound similarity, syntactic acceptability, or semantic acceptability of miscues by remedial readers. (See Appendix A)

A post hoc test for a significant interaction was employed to determine the simple main effect of the interaction between grade level and the distractibility index on the graphic similarity of miscues. Totals were adjusted for equal cell size and an F level was computed. Each cell was found to be significant at the .05 level of confidence. These data are included in Table 11. Each group was determined to be significantly different from each other.

Summary

In this chapter the analysis of the data which was generated from the testing instruments was presented. The

TABLE 9

ANALYSIS OF VARIANCE ON GRAPHIC SIMILARITY SCORES BY REMEDIAL READERS

SOURCE	df	SS	MS	F
Grade level	1	0.002	0.002	0.13
Distractibility	1	0.018	0.018	1.21
Interaction	1	0.158	0.158	10.71*
Error	24	0.285	0.012	
Total	27	0.463		

* $p < .05$

FIGURE 1

RELATIONSHIP BETWEEN PRIMARY AND INTERMEDIATE GRADE LEVELS AND HIGH AND LOW DISTRACTIBILITY SCORES ON MEASURES OF GRAPHIC SIMILARITY IN ORAL READING TASK BY REMEDIAL READERS

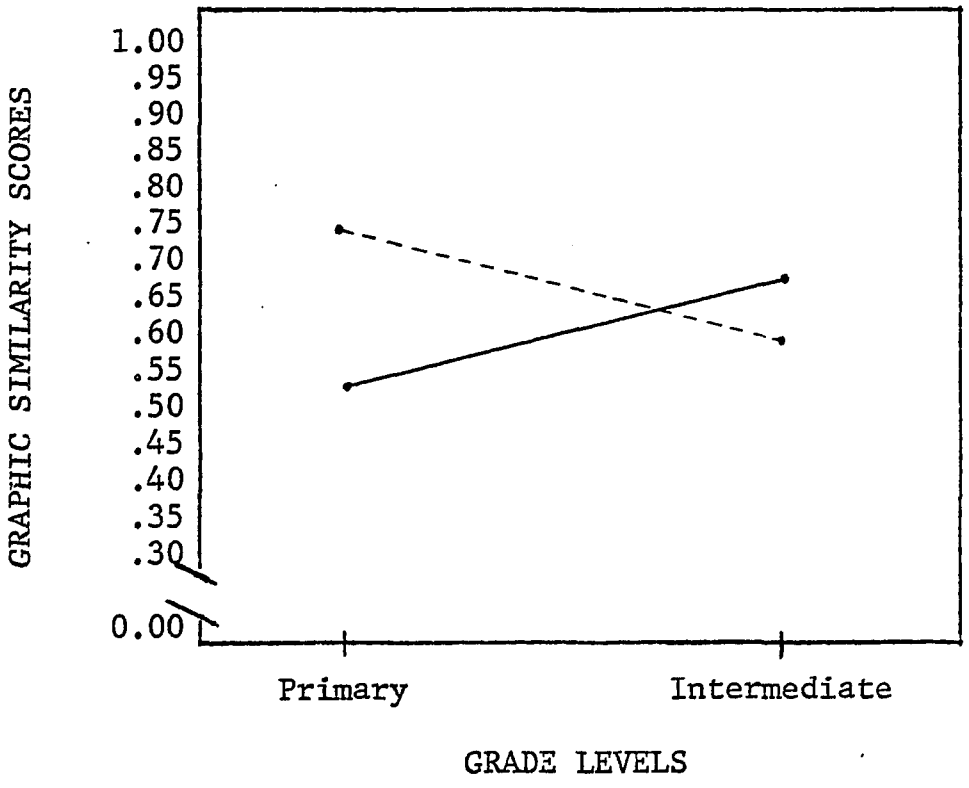

TABLE 10

POST HOC TEST FOR SIGNIFICANT INTERACTION SUMMARY FOR LINGUISTIC CUE SYSTEM SCORES FOR GRAPHIC SIMILARITY OF MISCUES BY REMEDIAL READERS IN ORAL READING TASK

SOURCE	ADJUSTED CELL SIZE	df	F
Distractibility (High and Low)		1	
Primary	7		5.33*
Intermediate	7		5.21*
Grade level (Primary and Inter.)		1	
High Distractibility	7		6.55*
Low Distractibility	7		5.78*
Interaction		1	
Error		24	
Total		27	

* $p < .05$

null hypotheses were analyzed using a multivariate analysis of variance. The SAS computer subprogram ANOVA Procedure processed the data. The null hypotheses formulated for this study tested the overall grade level effect, the overall distractibility effect, and the overall interaction between grade level and distractibility upon psycholinguistic cueing systems of remedial readers. Hypotheses H_{01} - H_{08} and H_{010} - H_{012} did not reach significance at the .05 level of confidence and therefore failed to be rejected. Hypothesis H_{09}, which tested the interaction between the grade level and the distractibility index upon the graphic similarity of miscues by remedial readers, was rejected at the .05 level of significance. Conclusions and recommendations drawn from these analyses will be presented in Chapter V.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study investigated the relationship of the cognitive control of distractibility to the linguistic cue systems a remedial reader uses to reconstruct meaning from print. The purpose of this research was to demonstrate the effect of distractibility and grade level upon the graphic similarity, sound similarity, syntactic acceptability, and semantic acceptability of oral reading miscues made by remedial readers.

The sample for this research was thirty-two remedial readers who were enrolled in a public school summer program. There were sixteen primary grade level subjects and sixteen intermediate grade level subjects. Each subject was individually administered the Fruit Distraction Test and asked to orally read an instructional level story from the Reading Miscue Inventory. One intermediate and three primary grade level students were classified as indeterminate distractibility, leaving thirteen

primary and fifteen intermediate grade level subjects (N=28) in the high and low ranges of distractibility. In the first stage of the analysis of the data, a score with a range of 0-1 was computed for the degree of graphic similarity, sound similarity, syntactic acceptability, and semantic acceptability of the miscues generated and coded from the RMI. High scores reflected higher use of the linguistic cues, and low scores reflected lower use of the cueing system.

The second stage of the analysis tested the hypotheses of the study by means of a two-way analysis of variance. This provided a comparison of the main effect of the independent variables and their interaction upon each of the four dependent variables. A multivariate analysis of variance tested the criteria for overall interaction of grade level and distractibility upon the linguistic cue systems. A post hoc test for significant interaction determined the simple main effect.

Conclusions

From the statistical analysis of the data, the following conclusions can be drawn:

1. Remedial readers with both high and low

cognitive control of distractibility have not been observed to perform differently in their use of the linguistic cue systems.

2. Remedial readers in both primary and intermediate grade levels have not been observed to perform differently in their use of the linguistic cue systems.

3. When grade and distractibility levels are considered together in the use of the linguistic cue system, an interaction cannot be eliminated in the graphic similarity of the miscues. The differential effect of high and low distractibility levels on the use of graphic cues changes by grade level.

4. Primary remedial readers who are highly distractible score lower on graphic similarity cues than primary or intermediate low distractibility remedial readers or their intermediate counterparts of high distractibility.

5. Primary remedial readers who are not distractible score higher on graphic similarity cues than their intermediate counterparts or the highly distractible primary or intermediate remedial readers.

6. Intermediate remedial readers who are highly

distractible score higher on graphic similarity cues than primary high distractibility or intermediate low distractibility remedial readers.

7. Intermediate remedial readers who are not distractible score lower on graphic similarity cues than their primary counterparts or more highly distractible intermediate remedial readers.

8. These conclusions would indicate that the linguistic strategies of remedial readers change inversely for high and low distractibles as they progress through the grades. High distractibility remedial readers move from lesser use of graphic cues to higher use of those cues to generate meaning from print. Low distractibility remedials move from greater use of graphic cues to lesser use of those cues to generate meaning from a written text.

9. High use of graphic similarity cues can be expected when primary readers are of low distractibility or when intermediate readers are of high distractibility cognitive control.

10. As with any testing measure, the possibility exists that neither the FDT nor the RMI tapped the differences that possibly do exist within the population

of remedial readers.

11. Small sample size and the effect of numerous variables may have caused the subjects of this study to appear to be more similar than if they were part of a larger sample which might allow more individual differences to surface.

Recommendations

From the findings and conclusions of this study, the following recommendations can be made:

1. The researcher determined that future investigations of this type might compare its findings with those of a normal population as a control group.

2. Further studies are recommended in this area testing reading disability cases of two or more reading levels below grade level as compared to a normal population.

3. It is recommended that more research be conducted in the area of distractibility as a component of attention and remedial readers.

4. There appears to be a need for empirical assessment of the combination of cognitive controls (leveling-sharpening, focal attention, equivalence range,

tolerance of unrealistic experiences, impulsivity-reflectivity, field dependence-field independence) interacting on a remedial reader's ability to hypothesize and use linguistic cue systems.

5. Future research might seek to determine the existence of a relationship between graphic cues and comprehension skills. The psycholinguists have stated that we bring meaning to the print rather than getting meaning from decoded sounds.

6. It is recommended that other studies investigate the relationship between the type of instruction remedial readers receive and their inverse change in linguistic strategies as high and low distractibles as they progress through the grades.

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APPENDIX A

MANOVA RESULTS

AND

ANOVA RESULTS OF INSIGNIFICANT FINDINGS

TABLE 11

MANOVA RESULTS

SOURCE	WILKS LAMBDA	F	P > F
Grade Level	.74	1.81	.16
Distractibility	.79	1.37	.28
Interaction GL x D	.58	3.85	.02

df = (4,21) for all tests

TABLE 12

RELATIONSHIP BETWEEN PRIMARY AND INTERMEDIATE GRADE LEVELS AND HIGH AND LOW DISTRACTIBILITY SCORES ON MEASURES OF SOUND SIMILARITY IN ORAL READING TASK BY REMEDIAL READERS

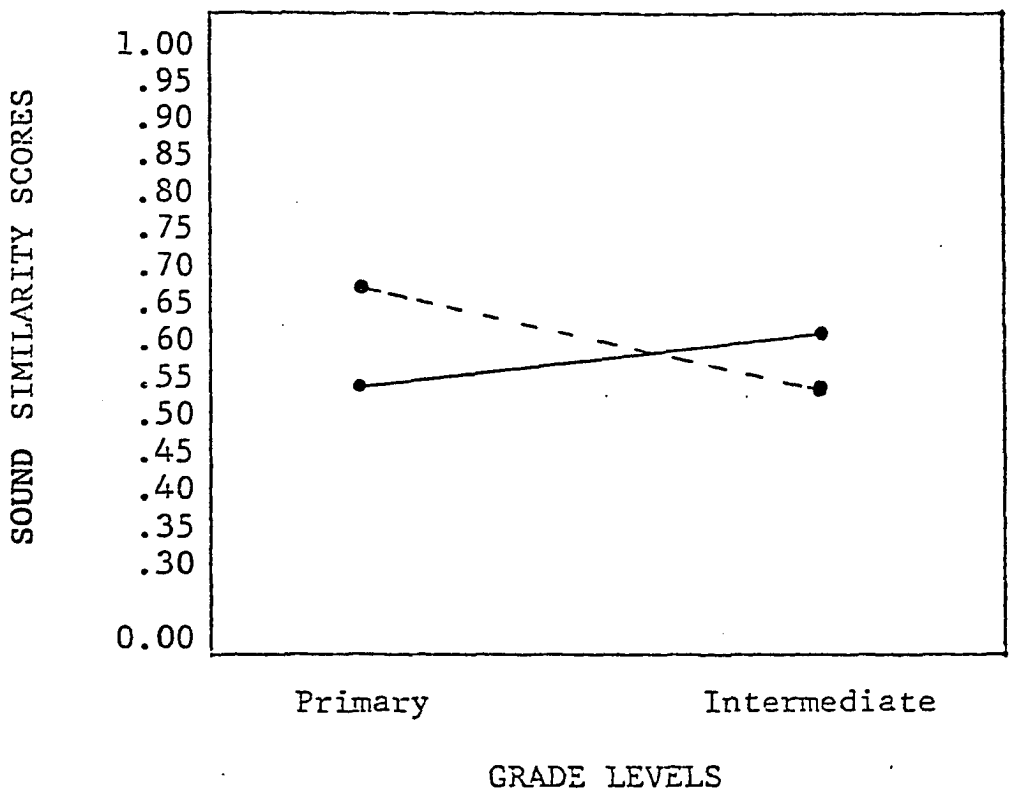


TABLE 13

RELATIONSHIP BETWEEN PRIMARY AND INTERMEDIATE GRADE LEVELS AND HIGH AND LOW DISTRACTIBILITY SCORES ON MEASURES OF SYNTACTIC ACCEPTABILITY IN ORAL READING TASK BY REMEDIAL READERS

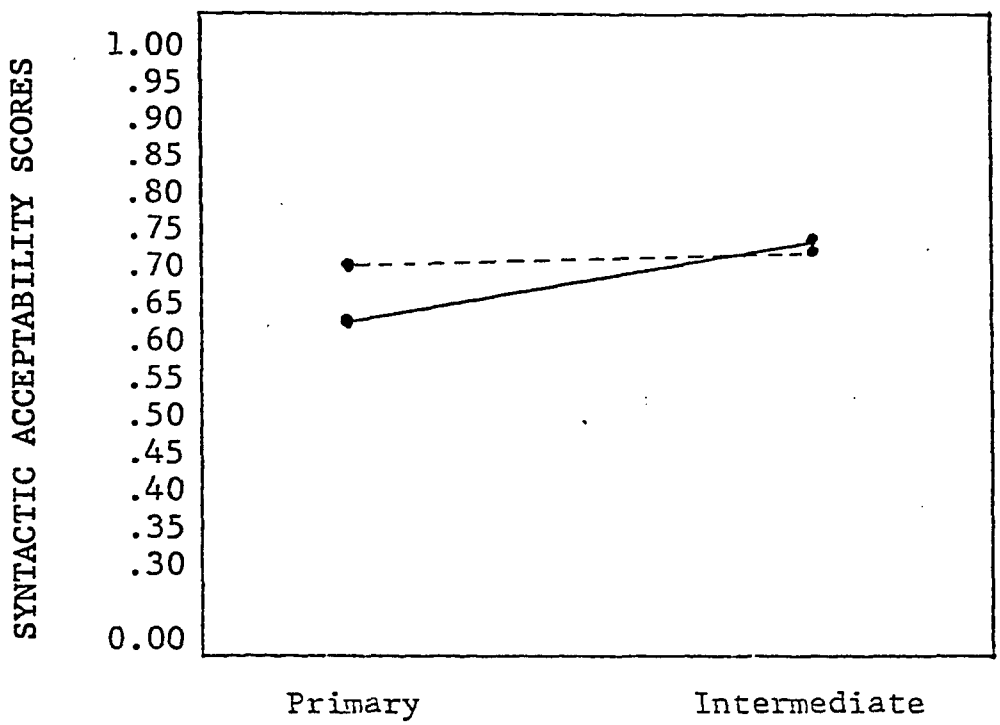


TABLE 14

RELATIONSHIP BETWEEN PRIMARY AND INTERMEDIATE GRADE LEVELS AND HIGH AND LOW DISTRACTIBILITY SCORES ON MEASURES OF SEMANTIC ACCEPTABILITY IN ORAL READING TASK BY REMEDIAL READERS

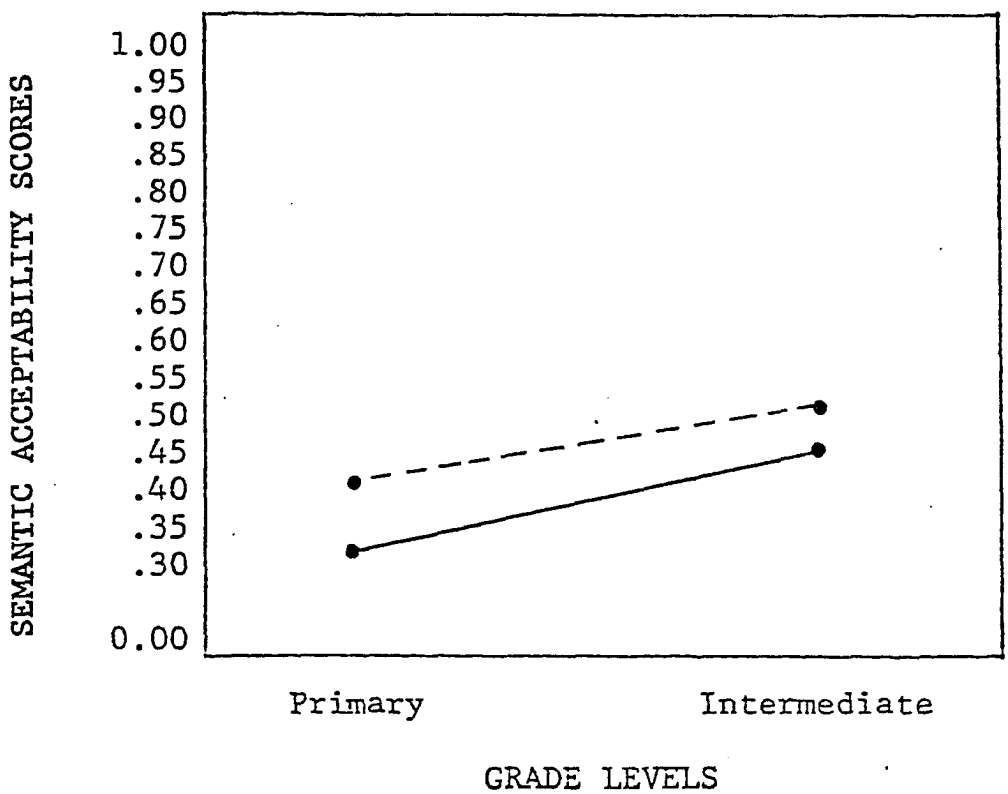


TABLE 15

ANALYSIS OF VARIANCE SUMMARY FOR SOUND SIMILARITY SCORES IN ORAL READING TASK IN REMEDIAL READERS

SOURCE	df	SS	MS	F	PR > F
Grade level	1	0.006	0.006	1.74	0.55
Distractibility	1	0.004	0.004	0.53	0.63
Interaction	1	0.073	0.073	1.05	0.051
Error	24	0.416	0.416		
Total	27	0.499			

TABLE 16

ANALYSIS OF VARIANCE SUMMARY FOR SYNTACTIC ACCEPTABILITY SCORES IN ORAL READING TASK IN REMEDIAL READERS

SOURCE	df	SS	MS	F	PR>F
Grade level	1	0.021	0.021	1.74	0.19
Distractibility	1	0.006	0.006	0.53	0.47
Interaction	1	0.012	0.012	1.05	0.31
Error	24	0.285	0.012		
Total	27	0.324			

TABLE 17

ANALYSIS OF VARIANCE SUMMARY FOR SEMANTIC ACCEPTABILITY SCORES IN ORAL READING TASK IN REMEDIAL READERS

SOURCE	df	SS	MS	F	PR > F
Grade level	1	0.089	0.089	3.93	0.059
Distractibility	1	0.036	0.036	1.57	0.222
Interaction	1	0.003	0.003	0.13	0.722
Error	24	0.545	0.023		
Total	27	0.673			

APPENDIX B

READING MISCUE INVENTORY

CODING SHEET

AND

READER PROFILE

Permission was granted by Macmillan Publishing Company in a telephone conversation on June 28, 1979 to include the Reading Miscue Inventory Coding Sheet and the Reading Miscue Inventory Reader Profile in the appendices of this dissertation.

READING MISCUE INVENTORY CODING SHEET

Reader	Date	Selection
Teacher	Class	School

QUESTION TOTAL	PERCENTAGE	COLUMN TOTAL		
			Miscue Number	
			Reader	
			Text	
			DIALECT	1
			INTONATION	2
			A	
			P	
			N	GRAPHIC SIMILARITY 3
			A	
			P	
			N	SOUND SIMILARITY 4
			A	
			P	
			N	GRAMMATICAL FUNCTION 5
PATTERN TOTAL	PERCENTAGE	COLUMN TOTAL		
			CORRECTION	6
			GRAMMATICAL ACCEPTABILITY	7
			SEMANTIC ACCEPTABILITY	8
			MEANING CHANGE	9
			No Loss	
			Partial Loss	
			Loss	COMPREHENSION
			Strength	
			Partial Strength	
			Weakness	
			Overcorrection	GRAMMATICAL RELATIONSHIPS

READING MISCUE INVENTORY READER PROFILE

Reader ______ Date ______ Selection ______

Teacher ______ Class ______ School ______

COMPREHENSION PATTERN

Percent of relationships of No Comprehension Loss to Partial Comprehension Loss to Comprehension Loss

Reader's Use of Reading Strategies:
- Highly Effective ☐
- Moderately Effective ☐
- Some Effective ☐
- Ineffective ☐

Percentage Line

0 10 20 30 40 50 60 70 80 90 100

Frequency Line

RETELLING SCORE ______

SOUND/GRAPHIC RELATIONSHIPS						GRAMMATICAL RELATIONSHIPS						
Sound			Graphic			Function			Relationships			
High	Some	None	High	Some	None	Identical	Indeterminate	different	Strength	Partial Strength	Weakness	Overcorrection
100	100	100	100	100	100	100	100	100	100	100	100	100
90	90	90	90	90	90	90	90	90	90	90	90	90
80	80	80	80	80	80	80	80	80	80	80	80	80
70	70	70	70	70	70	70	70	70	70	70	70	70
60	60	60	60	60	60	60	60	60	60	60	60	60
50	50	50	50	50	50	50	50	50	50	50	50	50
40	40	40	40	40	40	40	40	40	40	40	40	40
30	30	30	30	30	30	30	30	30	30	30	30	30
20	20	20	20	20	20	20	20	20	20	20	20	20
10	10	10	10	10	10	10	10	10	10	10	10	10

Repeated and Multiple Miscues

Reader	Text	Frequency of Miscue Occurrence	Frequency of Text Item Occurrence	Occurrence of Correction	Reader	Text	Frequency of Miscue Occurrence	Frequency of Text Item Occurrence	Occurrence of Correction

APPENDIX C

FRUIT DISTRACTION TEST

Hall-Mercer Children's Center

115 Mill Street, Belmont, Massachusetts 02178 Telephone 617 855-2804

Silvio J. Onesti, M.D., Director 855-2801

McLean Hospital

Francis de Marneffe, M.D., Director 855-2101
Shervert H. Frazier, M.D., Psychiatrist in Chief 855-2201

February 15, 1979

Ms. Margaret H. Shaw
2841 S.W. 87th
Oklahoma City, Oklahoma 73159

Dear Ms. Shaw:

We have sent you under separate cover a copy of the Fruit Distraction Test. I am pleased that you are obtaining a copy of my book as it should provide you with much information about this test and others. Certainly you have my permission to use the Fruit Distraction Test for your dissertation, and, of course, I would be most eager to learn about your findings. Should you feel that I could be of help in interpreting them, once you have gathered your data, please let me know.

Thank you for your interest.

Sincerely yours,

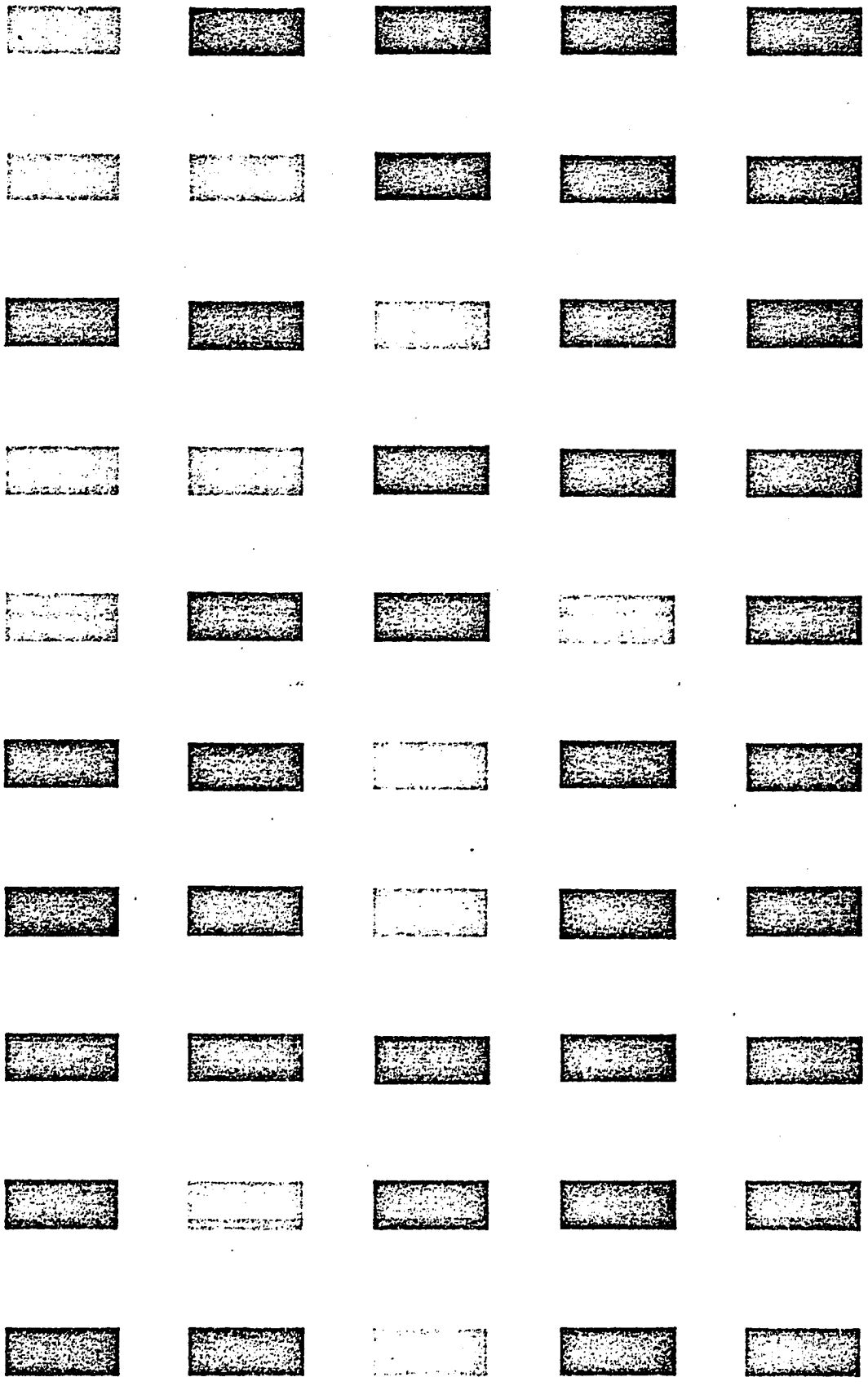
S. Santostefano

Sebastiano Santostefano, Ph.D.
Director, Department of Child
Psychology and Psychoeducation
and Associate Professor of
Psychology, Harvard Medical School

SS/gb

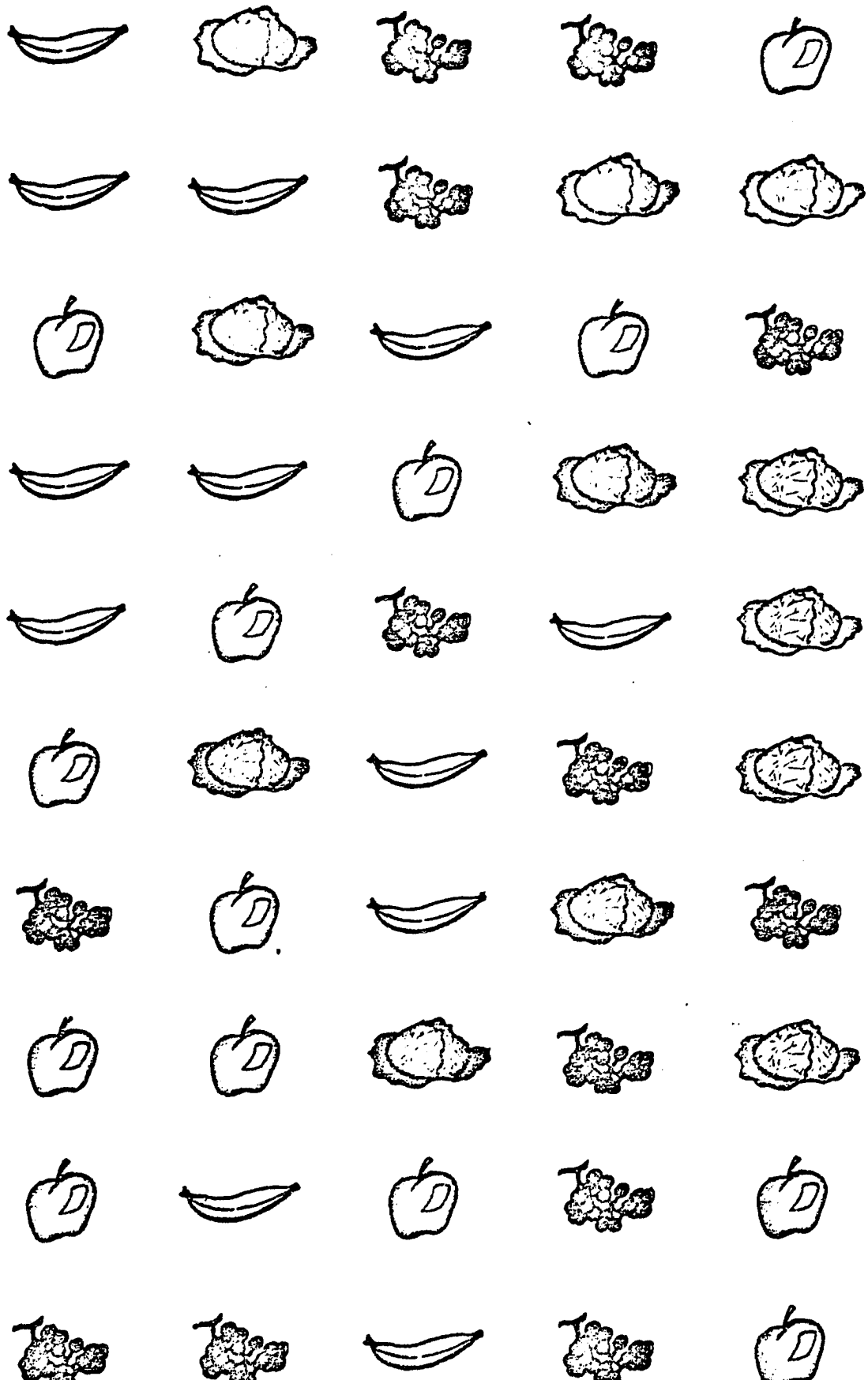
Enclosure: Invoice

FDT



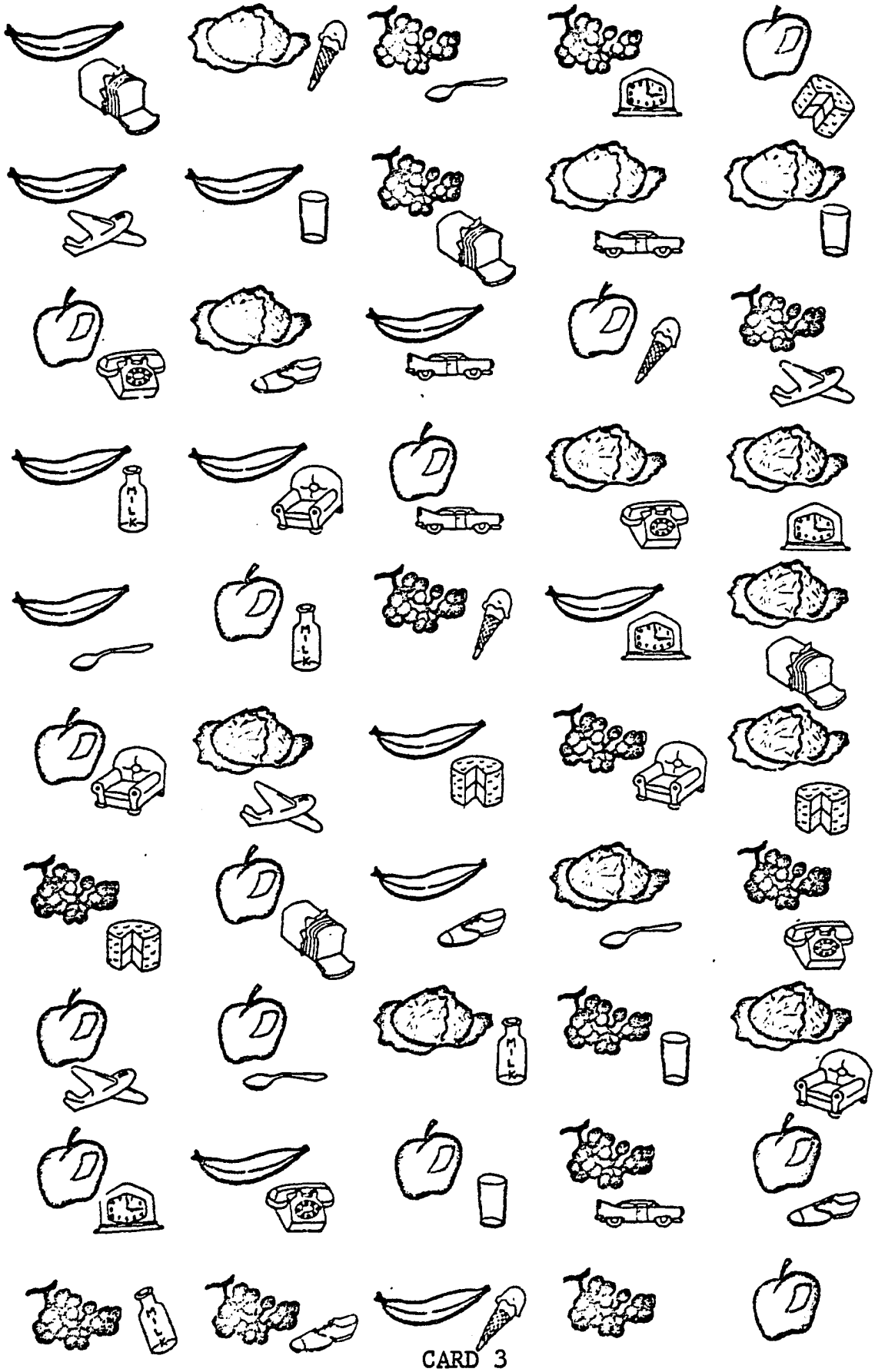
CARD 1

FDT



CARD 2

FDT



CARD 3

THE FRUIT DISTRACTION TEST (FDT)
A Procedure for Assessing the Cognitive Control Principle of Field Articulation

Introduction.

The cognitive control principle of field articulation concerns the manner in which a person deals with a stimulus field containing information defined as relevant and irrelevant in terms of the requirements of the task. The hallmark of this control, therefore, is selective deployment of attention and emphasizes in its process that attention be withdrawn and withheld from irrelevant information and directed at and sustained on relevant information.

As discusses earlier, the developmentally immature end of this continuum is represented by an individual who significantly directs attention at and sustains attention on both relevant and irrelevant information and therefore, his performance with the central task is disrupted and less efficient. The developmentally mature end of this continuum is represented by an individual who withdraws and withholds attention from irrelevant stimulation and selectively directs and sustains attention on relevant information. Accordingly,

his performance with the central task is efficient and not disrupted. It should be noted that in the proposed developmental hierarchy of cognitive control principles, the process of field articulation subordinates and integrates the developmentally earlier processes of tempo regulation and focal attention.

The Fruit Distraction Test (FDT) is proposed as a procedure for assessing the cognitive control principle of field articulation with children. The FDT has been used with children from the ages of about three to 15 years. With older children of average or better intelligence, the task requirements may be too simple to provide meaningful samples of field articulation behavior. Since the test was designed to parallel to some extent the Stroop Test (see Gardner, et al, 1959), we suggest that the Stroop Test, which requires reading words, be used with these individuals. The FDT requires that the child be able to recognize and name primary colors. If there is some question about the child's color perception, the Dvorine Color Plates Test, or other suitable procedure, should be administered first. If the child is color blind, the FDT is not suitable. A parallel form of the FDT is being developed which does not require color perception.

Materials.

The materials consist of four test cards, each 10" x 15" and three practice cards, each 1" x 10". The latter are used to train the child in the requirements of the test. The protocol used to record the child's response is shown in figure 6. (See also Figures 4, 5, 6, and 7, Chapter 4).

Test Card 1: On Card 1 are arrayed 50 bars, each approximately ½" x 1¼". Each bar is colored one of the primary colors: red, green, yellow and blue. There are 12 bars colored yellow and green, and 13 blue and red. The 50 bars are arrayed in 10 rows, 5 bars in each. The location of bars was determined by random assignment. Practice Card 1: Five bars are arrayed presenting each of the four primary colors at least once.

Test Card 2: On Card 2 are arrayed 50 lined drawings of apples, bananas, grapes, and heads of lettuce, each covering an area of approximately 1" x 1¼" and each colored correctly with one of the primary colors. The apples are colored red, the heads of lettuce green, the bananas yellow and the grapes blue. The 50 drawings are arrayed in 10 rows, five fruits in each. The arrangement of colors in rows and columns matches the arrangement of Card 1. Practice Card 2: Five fruits are arrayed presenting each of the four fruits

at least once and each of the primary colors.

Test Card 3: Card 3 contains apples, bananas, grapes and heads of lettuce colored and arranged identically as those on Card 2. In addition, to one side of each fruit is one of the following lined, achromatic drawings: a cake, ice cream cone, bottle of milk, spoon, glass, loaf of bread, (food-related objects); and a chair, car, airplane, shoe, telephone, clock (non-food-related objects). Each of these drawings covers an area approximately 1/2" x 3/4". In the task presented to the child these drawings are defined as irrelevant and as distractions. Each "irrelevant object" appears four times on the card, once with each of the four colored fruits. Their arrangement is random. No practice card is used with this test card.

Test Card 4: Card 4 contains the same order and arrangement of fruit as Cards 2 and 3. However, the four fruits and the four primary colors are combined incorrectly. That is, apples appear colored yellow, or green, or blue (four times each) but not colored yellow, etc. Practice Card 4: Five fruits, each colored incorrectly, are arrayed in a row.

General Method.

The FDT asks the child to name colors presented with

and without distractions and contradictions. The child is administered test cards 1, 2, 3 and 4, in that order. However, the examiner may choose to alter the order of administration to suit his own needs. In general, Cards 1 and 2 are used to provide a "base line" measure; i.e., a measure of naming colors as rapidly as possible without the presence of distractions and contradictions. Cards 3 and 4 are used to provide measures of naming colors in the presence of distractions and contradictions. Card 3 requires that the child name colors as rapidly as possible when the colors are imbedded among distractions; Card 4 requires that the child name colors as rapidly as possible when the information provided is contradictory.

As discussed elsewhere, factor analytic data suggest that for some children performance with Card 2, when compared with that of Card 1, provides a measure of color-naming in the presence of distraction. Apparently, naming colors which are placed on shapes representing familiar fruits is more distracting to these children than naming color bars. If the examiner wishes to obtain only one measure of the management of distractions (with either Card 3 or 4), one should administer either Card 1 or 2 to obtain a base-line measure.

The instructions presented here contain the information necessary to convey the task and set to the child. The examiner, of course, should alter the wording of the instructions to suit the child's age, vocabulary level and general psychological status. The intent is that the child understand what the test requires of him.

Instructions.

Card 1. Place Practice Card 1 before the child and say, "Do you see this?" Point to the first color bar. "What color is it?" Wait for the child to respond. "Good, and what color is this?" Point to the next square. "Go ahead and name the other colors for me."

The examiner insures that the child can name each of the colors. If the child does not name all of the colors correctly, the examiner may coach the child as much as seems necessary to establish whether the child can name colors consistently and correctly. If the child cannot, the test is discontinued.

After the child names correctly each of the four primary colors, say, "Now start here," (point to the first color bar on the left), "and name the colors as fast as you can until you reach here" (point to the last color bar on the right). "Do you get the idea? I want you to name colors as

fast as you can. Ready! Go ahead." The examiner insures that the child understands that he is to name the colors as rapidly as possible. We have found that young children often do not name colors any more rapidly during this phase of the training than during the first phase when they are simply identifying colors. The request to name colors as fast as possible often results in children speaking the names loudly, or poking vigorously at the colors but, while naming at the same rate as previously. This is accepted, of course. Other qualitative aspects of the performance should convey to the experienced examiner that the child understands he is to read as quickly as he is able.

When the child understands the task he is to perform, the examiner says, "Now I am going to give you a big card with many rows of the same colors. I want you to name the colors as fast as you can."

The examiner presents the child with Test Card 1 (color bars) and says, "See, start here (point to the first bar on the top row) and name the colors as fast as you can. When you finish this top row (the examiner passes his finger along the top row of color bars from left to right) go on to this next row (the examiner passes his finger again from left to right across the second row of bars) until you reach here

and then go on to the next. Keep naming colors until you reach here (point to the last figure in the bottom row). Try not to skip any and try to go as fast as you can. Do you understand?"

The examiner insures that the child understands the task. "Ready? Begin!" The examiner begins his stop watch and follows the child's color-naming with the test protocol (see figure 6). The examiner records reading errors by marking the appropriate box in the protocol (see section on Scoring) and reading time. The time to read each line, or pair of lines, may be recorded accumulatively as well as the total time taken to read the entire card.

Card 2. Place Practice Card 2 before the child and say, "Do you see this fruit? What is this? (apple) That's right. And this?" Ask the child to name each of the fruit. If the child does not label them correctly, the examiner provides the correct names. Note that the young children often cannot easily identify the heads of lettuce or the grapes. After the child has labeled each fruit say, "What color is that apple?" (Wait for the child to respond.) "That's right, it's red. And what color is this banana?" The examiner has the child name the colors on each of the fruit. "That's right. For this part of the game the apples

are colored red, the bananas are colored yellow, the grapes are colored blue and the lettuce is colored green. Now I want you to start over here, (point to the fruit on the far left) and name the colors one after another until you reach here. (Point to the figure at the far right of the row) Go ahead. Start here and name the colors as fast as you can. Ready? Go!" The examiner insures that the child understands that he is to name the colors as rapidly as possible as with Card 1.

If the child performs appropriately with the practice card, say, "That's fine. Now I am going to give you a big card with many rows of the same fruit and I want you to say out loud the colors of the fruit as fast as you can."

The examiner presents the child with Test Card 2 and says, "See, start here (point to the first fruit in the top row) and name the colors as fast as you can. When you finish this top row (the examiner passes his finger along the top row of fruit from left to right) go on to this next row (the examiner passes his finger again from left to right across the second row) until you reach here (point to the last figure in the bottom row). Try not to skip any and try to go as fast as you can. Do you understand?" The examiner insures that the child understands the task. "Ready? Begin!"

As with Card 1, the examiner begins a stop watch and follows the child's color naming with the test protocol. The examiner records reading errors in the appropriate box (see section on Scoring). The examiner records total time taken to read the card, and he may record reading time accumulatively by each line or by pair of lines.

Card 3. After the child has completed either Card 1 or Card 2 (or both if the examiner has chosen to use both base-line cards), the examiner removes the card and says, "Now I am going to give you another card which has the same fruit on it and the same colors. But on this card are a lot of little pictures of other things all around the fruit. I want you to name the colors for me again as fast as you can starting at the top and going to the bottom just like you did with the last card. You should try not to pay attention to all the little pictures that are on the card. Look only at the colors. If you pay attention to those little pictures, they will slow you up. You will not be able to read the colors as fast as you can. Do you understand?"

The examiner takes a moment to clarify any question the child may have. Usually, if the child has handled Card 2 successfully, he understands the task required of him in Card 3. The examiner presents the child with Card 3 and says,

"Begin here (pointing to the first figure). Ready, Go!" The child should not be handed the card until he is ready to begin. If the child is given the card and then he begins to ask questions, remove the card. This is necessary because the child may scan the card, during the discussion, and examine the peripheral distractions. The child's recall of distractions, requested at the end of this test card, will be influenced by this longer exposure.

Again, the examiner records reading errors in the appropriate boxes of the test protocol (see section on Scoring) and records total time taken to read the card. The examiner may record reading time accumulatively by pairs of lines or by each line.

Occasionally, a child will not respond immediately and seems to be looking about the card at the peripheral figures. If a child does not begin naming colors within ten seconds, the examiner should repeat the instructions, saying, "Begin here (pointing to the first figure) and name the colors for me as fast as you can. Just try to pay attention to the colors." However, the stop watch should continue to run during this time.

After the child completes the task, the examiner removes the card and says, "I know I asked you to name the

colors and to try not to pay attention to the pictures that were on the card, but kids sometimes notice the pictures around the fruit, while they name colors. While you were naming the colors, did you happen to notice any of the pictures? What pictures do you remember noticing?" After the child gives his first recall, he is encouraged only once with, "Can you remember any others?" No further encouragement is offered. The examiner records the child's recall of the peripheral figures on the protocol. (See section on Scoring).

Card 4. After the child has completed either Card 2 or Card 3, (or both) the examiner says, presenting Practice Card 4, "Now the next part of this game is a little different. Do you see?" (Point to the first fruit on the practice card). "The fruits are colored wrong. The banana is colored red. What color should it be?" (Wait for the child to respond.) "That's right. And what color should the apple be?" In this way, the examiner establishes that the child knows the colors that should be on each fruit. "Now start here," (the examiner points to the first fruit in the row) "and name the colors that should be there as fast as you can until you reach here." (Point to the last fruit in the row). "Do you get the idea? I want you to name the colors as fast as you

can that should be there. Ready? Go ahead!" The examiner insures that the child understands that he is to name the colors that should be there as rapidly as possible.

"Now I am going to give you a big card with many rows of the same fruit but all the colors are wrong. I want you to name the colors that should be there as fast as you can."

The examiner presents the child with Test Card 4 and says, "See, start here (point to the first fruit in the top row) and name the colors that should be there as fast as you can. Keep naming colors until you reach here (point to the last figure in the bottow row). "Try not to skip any and try to go as fast as you can. Do you understand?"

The examiner handles any questions the child may ask and insures that he understands the task. However, do not leave the test card exposed if the discussion takes more than about 10 seconds. If the child seems unclear and needs further explanation, lay the card face down until the child is ready to begin. The practice strip could be used for purposes of illustration.

"Ready? Begin!" The examiner begins the stop watch and follows the color naming, marking reading errors in the appropriate box. The examiner records total reading time.

He may record reading time cumulatively by pairs of lines or by single lines.

Scoring and Interpretation

A. Recording Reading Errors

There are three types of reading errors recorded on the test protocol. The first two apply to all four test cards. The third applies to Cards 2, 3 and 4.

1. The child names a color which is incorrect; e.g., he should say "red" and he says "yellow". We have found it convenient to record this error by writing the first letter of the color name as a capital letter in the appropriate box of the test protocol. In this case a "Y." If the child spontaneously corrects himself, (e.g., "yellow, I mean red") the letter is followed by a plus sign. If an error is not corrected, only the letter is recorded.

2. The child begins to pronounce a color name which is incorrect; e.g., bl...(the child clearly intends to say blue). We have found it convenient to record this type of error by writing the first letter of the color name in question with a small letter. In this example, "b". Again, the letter is followed by a plus sign if the child spontaneously corrects his error.

3. The child may say the name of a fruit rather than the color, or he may name one of the peripheral objects found in Card 3. Here again, we have found it useful to use a capital letter if the entire word is spoken and a small letter if part of the word is spoken and is clearly identified by the examiner. To avoid confusion with the designations for blue and green, we have used Bn for banana and Gp for grapes.

When dealing with any one of the cards, a child may make more than one error with one color. For example, if he is to say "blue", but instead says "Red, I mean gr..., I mean blue," the symbols R, g+, are recorded in the appropriate box of the test protocol. If the child names the colors correctly and makes no other sound, nothing is recorded in those boxes.

Other qualitative aspects of the child's performance may be recorded, for example: (a) Pauses (both verbal and nonverbal); (b) The child's tempo and grouping of the color names while performing. We have noticed that some children name colors fairly evenly, pausing between each color name. Others name the colors in pairs, or in triplets, or after the five colors in one row, with brief pauses separating each set. Other children show an uneven, seemingly random rhythm when color naming. We have also noticed that a child's

rhythm may be consistent from card to card or may change. For example, a child may name colors in triplets, rhythmically, with Card 2, and show "random," uneven color-naming when handling Card 3, which presents the same information surrounded by distractions. A rhythm of naming colors by triplets or lines is viewed as a higher level of cognitive organization than naming colors individually or by pairs. (c) Motoric behavior the child shows while naming colors is also diagnostically significant. For example, a child may thrust his head forward, or poke each color with his finger, or jab his forefinger into the air with each color named. Again notice whether motor behavior is conspicious with one card and not another.

B. Scoring

For the Fruit Distraction Test, three scores are computed and interpreted in terms of the concept of field articulation: (1) Reading Time Distractibility Score; (2) Reading Error Distractibility Score; and (3) Number of Recalls of Peripheral Figures (with Card 3).

In general, to compute Reading Time and Reading Error Distractibility Scores, the reading time and reading errors observed with Cards 1 or 2 (or both), whichever is used to obtain a measure of color naming in the absence of distraction

and contradiction, is compared with reading time and reading errors observed with Cards 3 and 4. If Card 3 is used, the differences observed in reading time and reading error are viewed as related to the child's management of information in the face of peripheral, irrelevant distractions. If Card 4 is used, the differences observed are viewed as related to the child's management of information in the face of contradiction.

1. Reading Time Distractibility Scores
   a. Reading time with Card 2 minus reading time with Card 1.
   b. Reading time with Card 3 minus reading time with Card 2.
   c. Reading time with Card 4 minus reading time with Card 2.
2. Reading Error Distractibility Scores
   a. Reading errors with Card 2 minus reading errors with Card 1.
   b. Reading errors with Card 3 minus reading errors with Card 2.
   c. Reading errors with Card 4 minus reading errors with Card 2.

   Note that one may find it helpful, when

examining reading errors, to distinguish between types of reading errors (e.g., whether the total name of a color was spoken incorrectly or only the first sound of the name; the number of verbal and non-verbal pauses, etc.).

3. Number of Recalls of Peripheral Figures

The peripheral objects recalled, after Card 3 is removed, are analyzed in terms of (a) the number of correct food-related objects, (b) the number of non-food-related objects and (c) fabulated objects. The following is a list of food and non-food-recalls accepted as correct:

Food	Non-Food
Bread	Clock
Ice Cream Cone	Plane, Jet
Cake, Cheese	Car, Auto or make of car
Glass, Cup	Chair
Spoon	Telephone
Bottle, Milk, Milk bottle	Shoe, Slipper

The Fabulated Recall Score represents the number of items the child reports remembering which are not present on Card 3 (e.g., a train, a bed, a book, a boat) or which represent possible distortions or elaborations of objects present on Card 3 (e.g., a sandwich, a fork, milk shake). The description of an object which is not articulated (e.g., "something

round") is not considered a fabulation.

4. Reading Variability Score

We have found it helpful to compute a measure of variability, if reading time is recorded for each line or for each pair of lines. Here the arithmetic mean of the reading times observed for each line or pair of lines is computed. Then the deviation of each value (of each time for each line or pair of lines) from the mean is squared. These squared values are summed. (Those familiar with the formula for the statistic "variance" will recognize that this is the procedure being employed.) It may be helpful to compare variability observed in reading time with base line cards (Cards 1 or 2) and variability observed with distractive cards (Cards 3 and 4).

C. Interpretation

The scores are interpreted as follows. The child who takes longer to name colors, and who makes more reading errors when naming colors, with Cards 3 and 4 versus Cards 1 and 2, and who recalls more peripheral objects after Card 3, tends not to selectively withhold attention from irrelevant and peripheral information when managing information surrounded by distraction and irrelevancies. This child would tend to deploy attention more or less indiscriminately

to all information. Accordingly, this child is likely to be easily distracted away from the central task by irrelevant information. In terms of the theoretical framework discussed here, this child would be viewed as functioning at a developmentally low level of the cognitive principle of Field Articulation. On the other hand, the child who reads Cards 3 and 4 nearly as quickly as Cards 1 and 2 and who recalls few peripheral objects located on Card 3 tends to deploy attention selectively, that is, to withhold attention from information defined as irrelevant, and to direct attention at information defined as relevant to the task at hand. Therefore, this child is not likely to be disrupted by peripheral distracting information. In terms of the theoretical framework discussed here, this child would be viewed as functioning at a developmentally mature level of the cognitive principle of field articulation. Time and error differences associated with various age levels are presented in Chapter 7.

Qualitative aspects of the child's performance are examined along with time and error differences. For example, a child may take 10 seconds longer to name the colors of Card 3 versus the colors of Card 2. Yet while naming the colors of Card 3, the child may shout the names and punctuate each color named with a forward thrust of his head. This behavior

is not observed when he deals with Card 2. Taken together, these behaviors would indicate that the distractions of Card 3 are competing for attention, that the distractions are creating cognitive-affective stress, and that the child is relying on motoric, rhythmic behavior to sustain attention on the relevant information. From the developmental point of view, involving motoric behavior to this extent, in a primarily cognitive task, represents an ego regression and suggests a deficiency and vulnerability in field articulation functioning.

Restlessness, angry outbursts, silliness, losing one's place, refusal to continue, and other affective expressions of distress are commonly observed during Cards 3 and 4 with children who are diagnosed as significantly lagging in field articulation functioning and development. For example, behaviors such as these were typical of kindergarten children, discussed in Chapter 6, who were judged at risk academically and who showed learning disabilities in elementary grades. The reader should make use of the factor analytic data presented in Chapter 5 in interpreting the results of a given protocol. For example, brain damaged children showed especially inefficient field articulation functioning when the background (e.g., the incorrect color of Card 4) contained

the irrelevant information. With orphaned children, for whom peripheral irrelevent information aroused affects related to need states, and these affects were inefficiently isolated or otherwise defended against, the field articulation principle was particularly inefficient in managing peripheral, distracting information.

REFERENCES

See: Santostefano, S. A biodevelopmental approach to clinical child psychology: Cognitive controls and cognitive control therapy. New York: Wiley, 1978.

Reports a number of studies of normal and clinical populations by S. Santostefano and other investigators.

FRUIT DISTRACTION TEST

S. Santostefano, Ph.D.
McLean Hospital Children's Center and Harvard Medical School

NAME_____ DATE _____ SUBJECT GROUP_____ AGE _____

PART 1: COLOR BARS

					TIME
YELLOW	GREEN	BLUE	BLUE	RED	
YELLOW	YELLOW	BLUE	GREEN	GREEN	
RED	GREEN	YELLOW	RED	BLUE	
YELLOW	YELLOW	RED	GREEN	GREEN	
YELLOW	RED	BLUE	YELLOW	GREEN	
RED	GREEN	YELLOW	BLUE	GREEN	
BLUE	RED	YELLOW	GREEN	BLUE	
RED	RED	GREEN	BLUE	GREEN	
RED	YELLOW	RED	BLUE	RED	
BLUE	BLUE	YELLOW	BLUE	RED	

TOTAL TIME: _____

Observations:

FRUIT DISTRACTION TEST

PART 2: FRUIT COLORED CORRECTLY

					TIME
YELLOW	GREEN	BLUE	BLUE	RED	
YELLOW	YELLOW	BLUE	GREEN	GREEN	
RED	GREEN	YELLOW	RED	BLUE	
YELLOW	YELLOW	RED	GREEN	GREEN	
YELLOW	RED	BLUE	YELLOW	GREEN	
RED	GREEN	YELLOW	BLUE	GREEN	
BLUE	RED	YELLOW	GREEN	BLUE	
RED	RED	GREEN	BLUE	GREEN	
RED	YELLOW	RED	BLUE	RED	
BLUE	BLUE	YELLOW	BLUE	RED	

TOTAL TIME: _____

Observations:

FRUIT DISTRACTION TEST

PART 3: FRUIT COLORED CORRECTLY AND DISTRACTIONS

					TIME
YELLOW	GREEN	BLUE	BLUE	RED	
YELLOW	YELLOW	BLUE	GREEN	GREEN	
RED	GREEN	YELLOW	RED	BLUE	
YELLOW	YELLOW	RED	GREEN	GREEN	
YELLOW	RED	BLUE	YELLOW	GREEN	
RED	GREEN	YELLOW	BLUE	GREEN	
BLUE	RED	YELLOW	GREEN	BLUE	
RED	RED	GREEN	BLUE	GREEN	
RED	YELLOW	RED	BLUE	RED	
BLUE	BLUE	YELLOW	BLUE	RED	

TOTAL TIME: _____

Observations:

FRUIT DISTRACTION TEST

PART 4: INCORRECT COLORS

					TIME
YELLOW (GREEN)	GREEN (RED)	BLUE (YELLOW)	BLUE (YELLOW)	RED (BLUE)	
YELLOW (GREEN)	YELLOW (BLUE)	BLUE (GREEN)	GREEN (BLUE)	GREEN (RED)	
RED (BLUE)	GREEN (YELLOW)	YELLOW (BLUE)	RED (YELLOW)	BLUE (GREEN)	
YELLOW (RED)	YELLOW (GREEN)	RED (GREEN)	GREEN (YELLOW)	GREEN (BLUE)	
YELLOW (RED)	RED (BLUE)	BLUE (RED)	YELLOW (BLUE)	GREEN (RED)	
RED (BLUE)	GREEN (YELLOW)	YELLOW (RED)	BLUE (RED)	GREEN (BLUE)	
BLUE (YELLOW)	RED (GREEN)	YELLOW (GREEN)	GREEN (RED)	BLUE (GREEN)	
RED (YELLOW)	RED (BLUE)	GREEN (BLUE)	BLUE (RED)	GREEN (YELLOW)	
RED (GREEN)	YELLOW (RED)	RED (GREEN)	BLUE (GREEN)	RED (YELLOW)	
BLUE (GREEN)	BLUE (RED)	YELLOW (BLUE)	BLUE (YELLOW)	RED (YELLOW)	

TOTAL TIME _____

Observations: