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BETWEEN VISUAL-VERBAL REPRESENTATION IN
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AN EXPERIMENTAL STUDY TO DETERMINE THE EFFECTS OF PLAY FACILITATION UPON THE RELATIONSHIP BETWEEN VISUAL-VERBAL REPRESENTATION IN CHILDREN'S DRAWING AND READING ACHIEVEMENT AT FIRST GRADE LEVEL

DISSERTATION
Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By
Elizabeth Ann Crosby, B.S., M.S.

* * * * *

The Ohio State University
1975

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CHAPTER ONE

INTRODUCTION

This study was divided into two parts. The purpose of the first part was to compare developmentally advanced readers (DARs) and developmentally delayed readers (DDRs) of average IQ, on the variables of spatial representation in drawing and verbalization about their drawing. The purpose of the second part of the study was to determine if a ten-week play-facilitation intervention program with delayed readers resulted in further development of cognitive skills, such as reading, and if the play intervention had a significant effect upon children's drawing and their verbalization about their drawing.

Traditionally, nursery educators have regarded play as "an inherent right of the child" (Omwake, 1968, p. 8). Since the mid-sixties, however, with the establishment of compensatory programs such as Project Headstart, pre-school educators have been requested to justify the continuation of traditional practices. Programs emphasizing creative elements, including child play and art, have been replaced by programs which emphasize skill building in the academic areas. The contribution of Piaget's (1963) theory of intellectual
development was a major factor in the new thrust toward emphasizing cognitive development in early childhood programs. Also, the statement by Jerome Bruner that "the foundations of any subject may be taught to anybody at any age in some form" (Hall, 1970, p. 53) gave support to the shift toward structured programs. At the University of Illinois, Urbana, the Bereiter-Englemann program (1964), now known as the Englemann-Becker program, presented a highly structured approach to learning which emphasized the cognitive aspects of the early childhood curriculum. The program, modeled by many other programs, focused especially upon reading, language development and mathematical skills; play and art were not included as major curricular elements (Pines, 1966).

Almy (1968) claimed that some of the newcomers to the field of early childhood education did not discount play entirely, but attempted instead to capitalize on the young child's tendency to play. She cited as an example the "prepared learning environment" of O. K. Moore (1959), noted for his talking typewriter, an automated machine called the E.R.E., Edison Responsive Environment (Pines, 1966). In this case, the child's fascination for and interaction with the machine were instrumental in the facilitation of the acquisition of skills, such as the mastery of letter names, association of symbols and sounds, and
learning combinations of letters, all of which are necessary for beginning reading.

Biber and Franklin (1968) suggested that the child needs a planned educational environment which must include a variety of materials that invite self-initiated manipulation of those materials. This manipulation may well take the form of creative art expression and exploration through play. This view is supported by Omwake, who stated that play is too often looked upon as a "pastime activity offering relief from learning rather than as a stimulus to it" (Omwake, 1968, p. 19). She suggested that play periods and recess in primary education should be given the same amount of scrutiny, careful planning and supervision that is presently available for the teaching of academic subjects.

Murphy (1969) claimed that in many instances learning theory has been shaped by a narrow range of concepts which include vocabulary, memory, reasoning and comprehension, and by Piaget's insights regarding the child's early development. She felt that there is an underlying error in the idea that there is one correct way to provide for the child's developmental needs. She recalled a time when the central concern of the child care programs was the prevention of infection; today the central theme is cognitive development through specific teaching programs. To her it is paradoxical that many recent investigators are once
again following a single course. In doing this, other aspects of development are being overlooked, namely the importance of activity which contributes to the child's learning.

Consequently, in an era where the dominant theme is that of cognitive development, those educators who believe in child-centered programs where play and art are a vital part of the program, and who wish to establish the validity of this type of program, must now demonstrate empirically the value of play and art in terms of cognitive development.

Traditionally, play, which is a means of symbolic expression, has been almost a non-subject so far as the researchers are concerned (Sutton-Smith, 1955). Throughout history, according to Singer (1973), man has been only slightly concerned with the experiences of the child, and the record of civilization shows a lack of material which describes childhood experiences and child play. Most of the writing about play has been in the psychoanalytic school (Waelder, 1933; Peller, 1954; Freud, A. 1965; Mahler, 1967; Erikson, 1968; Isaacs, 1972) which sees child play as a reflection of basic wishes and conflicts. To the psychoanalytic school the process of play serves as a catharsis for the individual.

The publication of Smilansky's study, *The Effects*
of Socio-Dramatic Play on Disadvantaged Pre-School Children (1968), was the pivotal point for a major increase in play research by educators (Sears, 1972; Lindberg, 1973; Wolfgang, 1973). Smilansky's study indicated that children from lower socioeconomic backgrounds did not achieve the high levels of symbolic play characteristically associated with the kindergarten years. She concluded that the lack of participation in socio-dramatic play is an indication that children cannot function with academic subjects such as reading. Consequently, she suggested that, in view of this, intervention with play should result in further development of cognitive skills, such as reading.

Traditionally, the area of art, which is also a means of symbolic expression, has been researched in terms of developmental art stages (Ricci, 1887; Barnes, 1892; Lowenfeld, 1957; Lewis, 1962), but art has not been tied to cognitive theory. However, according to McFee (1961), art is not a separate activity that is unrelated to other behavior, but rather, it is a process which fuses the intellect, the child's perceptions, and his inventiveness in organizing that which he is learning from the environment. Although the value of art in the young child's experience has been given recognition (Ruskin, 1857; Sully, 1895; Read, 1968; Lowenfeld and Brittain, 1964; Diamondstein, 1974), "the field of evaluation in art education
is virtually a desert" (Goodlad, 1966, foreword). It was not until the Eisner (1967) study that the first major systematic art study was conducted to relate children's drawings to the cognitive skill of reading. The significance of this study in the area of art research lies in the successful construction of a standardized scale, The Eisner Visual-Verbal Spatial Representation Scale, to evaluate pictorial space in children's drawings. Eisner (1967) hypothesized that culturally disadvantaged children, when compared with culturally advantaged children, might not be as disadvantaged in art as they were in reading but found that this was not the case. As a result of his findings, he called for more empirical studies to relate art and cognition.

This study was designed to investigate mediums of symbolic expression, such as art, language, and play, and how they relate to cognitive skills, such as reading. In addition, the study was designed to determine the effects of a play-facilitation intervention program upon cognition in the area of reading achievement, and upon children's drawings and verbalizations about their drawings. Specifically, this study was designed to determine: (1) the spatial representation in drawing of DARs when compared to DDRs; (2) the quality of verbalization about the drawing of DARs when compared to DDRs; and (3) the effects of a
play-facilitation intervention program with DDRs only upon reading achievement, level of spatial representation in drawing, and quality of verbalization about their drawing.

**Statement of the Problem**

This study was conducted in two parts. Part A explored the comparison of developmentally advanced readers (DARs) and developmentally delayed readers (DDRs) in relation to their drawing and their level of verbalization. Part B explored the effects of a play-facilitation intervention program upon reading achievement, drawing, and level of verbalization of DDRs only.

**Part A**

The purpose of this section of the two-part study was to compare the spatial representation in drawing and quality of verbalization about drawing of children with average intelligence who were achieving success with reading (DARs) and children with average intelligence who were not achieving success with reading (DDRs). The following questions were considered:

1. Do DARs, when compared to DDRs, demonstrate a higher level of spatial representation in drawing, as operationally defined by The Eisner Visual-Verbal Spatial Representation Scale?

2. Do DARs, when compared to DDRs, demonstrate a
greater capacity to verbally describe their
drawing, as operationally defined by the Monroe-
Rogers Quality of Ideas Scale?

Part B

This part of the study explored the effects of a 
play-facilitation intervention program for the DDRs only. 
The DDRs were sub-divided into two groups: (1) the treat­
ment group which received a ten-week play-facilitation 
intervention program, and (2) the control group which 
received no treatment. The following questions were con­
sidered:

1. Does a play-facilitation intervention program 
with DDRs result in an increase in reading 
achievement, as opposed to DDRs who do not 
receive the play-facilitation, as measured by 
the Stanford Achievement Test?

2. Does a play-facilitation intervention program 
with DDRs result in a difference in their spa­
tial representation in drawing, as opposed to 
DDRs who do not receive the play-facilitation, 
as measured by The Eisner Visual-Verbal Spatial 
Representation Scale?

3. Does a play-facilitation intervention program 
with DDRs result in a difference in their 
ability to verbally describe their drawing, as
opposed to DDRs who do not receive the play-facilitation, as measured by the Monroe-Rogers Quality of Ideas Scale?

**Hypotheses**

The following hypotheses to be tested in this study are stated in the null form:

\[ H_0^1 \] There is no significant difference at the .05 level between advanced and delayed readers of average intelligence in their use of spatial relationships in their drawing.

\[ H_0^2 \] There is no significant difference at the .05 level between advanced and delayed readers of average intelligence in their verbalizations about their drawing.

\[ H_0^3 \] There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program, in relation to their reading achievement.

\[ H_0^4 \] There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program, in relation to
their use of spatial representation in drawing.

\[ H_0 \]

There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program, in relation to their verbalization about their drawing.

**Overview of Design**

**Part A**

The subjects included in this part of the study were both DARs and DDRs. The design of this part included three major components: (1) the administration of the reading section of the Stanford Achievement Test to determine which of the children in four first-grade classrooms should be categorized as developmentally advanced readers (DARs) and developmentally delayed readers (DDRs); (2) the administration of the Otis-Lennon Mental Ability Test to the advanced and delayed readers to determine which children were eligible for inclusion in the study, id est, to determine which readers were within the 87-115 IQ range; and (3) the administration of a drawing task to the subjects who, as a result of the scores received on the Stanford Achievement Test and the Otis-Lennon Mental Ability Test, qualified for the study to determine the following:
a. the level of spatial representation achieved by each subject in his drawing, as measured by the fourteen categories of The Eisner Visual-Verbal Spatial Representation Scale.

b. the level of verbalization about the visual representation, or drawing, achieved by each subject, as measured by the Monroe-Rogers Quality of Ideas Scale.

Part B

The subjects included in this part of the study were DDRs only. These subjects were divided into two groups—a treatment group which received a ten-week play-facilitation intervention program, and a control group which received no treatment. This part of the study incorporated a randomized pre-test post-test control group design. The measures were:

(1) the reading section of the Stanford Achievement Test administered to developmentally delayed readers in both treatment and control groups to determine gains in reading achievement; and (2) the drawing task administered to developmentally delayed readers in both the treatment and control groups to detect gains in the subjects' use of space in drawing, as measured by The Eisner Visual-Verbal Spatial Representation Scale, and to detect gains in the quality of ideas expressed by subjects in their verbalizations about their drawing, as measured by the Monroe-Rogers
Quality of Ideas Scale.

In a summary of the overview of the design, Part A of the study was composed of two stages: (1) the administration of a reading test and an IQ test to determine eligibility of DAR and DDR subjects; and (2) the administration of a drawing and verbal task to DAR and DDR subjects to determine spatial representation in drawing and the quality of verbalization about the drawing.

Part B of the study was composed of five stages: (1) the establishment of a DDR treatment group and a DDR control group; (2) the selection and training of play facilitators; (3) the supervision of play facilitators during the ten-week play-facilitation intervention program; (4) the post-testing of the DDR treatment and DDR control groups with a reading test; and (5) the post-testing of the DDR treatment and DDR control groups with a drawing and verbal task to determine spatial representation in drawing and quality of verbalization about the drawing.

Definition of Terms

The following definitions are offered for terms used throughout the study:

1. Average IQ: For the purposes of this study, those students who fell within the 85-115 range on the Otis-Lennon Mental Ability Test.
2. **DARs** (Developmentally Advanced Readers): Children in the study within the average IQ range who score at or above the 80th percentile on the Word Reading Section of the Stanford Achievement Test.

3. **DDRs** (Developmentally Delayed Readers): Children in the study within the average IQ range who score at or below the 20th percentile on the Word Reading Section of the Stanford Achievement Test.

4. **Miniature-life toys**: Small toys which are representative of the child's environment, such as boy and girl dolls, trucks, cars, airplanes, soldiers, and furniture.

5. **Play facilitation**: A time period of one-half hour, twice per week, during which the Ss in the treatment group were taken individually from the classroom to a separate room where they were encouraged to play with the materials provided.

6. **Play facilitator**: The undergraduate students enrolled in a course in child development at The Ohio State University who, on an individual basis, encouraged each subject to play.

7. **Structured play**: Play that is characterized by materials which set limits, such as blocks for constructing.

8. **Symbolic play**: Play that is characterized by the substitution of an object for the object itself, such as a boy doll to represent the father, or a girl doll to represent the mother.


10. **Verbal representation**: The story that each subject told about his visual representation, or drawing.

**Limitations of the Study**

1. Because this study was confined to two selected elementary schools, generalization to other populations is limited.
2. Because the play-facilitation intervention program and all data collection were conducted with individual subjects, the number of subjects included in the study is minimal.

3. In order that the minimum number of DARs needed for the study could be secured, the IQ range designated as average had to be extended from 90-110 to 87-115. This range of IQ will particularly limit generalizations.

4. Because data collection for visual and verbal representation required the presence of an unfamiliar adult with an audio-tape recorder, expression of subjects may, at least initially, have been inhibited. Thus it would seem that a reactive effect may have been created for both groups by the presence of the adult and the recorder.

**Importance of the Study**

It is intended that this study should extend our knowledge of the relationship between play facilitation and cognitive skill development. As stated earlier by Smilansky (1965), intervention with play should result in further development of cognitive skills, such as reading. In addition, Eisner (1967) called for more empirical research which equates art and cognition so that our visual-verbal knowledge of the relationship of art to
reading and language development may be extended. According to art researcher Dr. W. Lambert Brittain (1974, personal correspondence), a study which would incorporate the child's verbalization about his visual representation would be, in itself, a good contribution to the literature.

The study should generate further questions for research, particularly in the area of art evaluation, and also in regard to the effect of play upon cognitive functioning. In addition, the study may generate research which explores the linguistic aspects of the artistic and aesthetic development of children (Ecker, 1973).

Summary

This chapter, chapter one, has identified the problem for consideration and presented the rationale for this study. The hypotheses to be tested, the operational definitions of terms used in this study, and the limitations and importance of the study were also included.

The next chapter, chapter two, contains a review of the related literature. Various aspects of the literature related to the study will be presented.
CHAPTER TWO

REVIEW OF THE LITERATURE

This chapter presents a review of literature related to the study. This review is presented in three sections: (1) theories and studies in children's art, (2) the function of child play, and (3) the inter-relationship of art and play as mediums of expression.

Theories and Studies in Children's Art

Traditionally, the emphasis in education has been placed primarily upon the cognitive subjects, such as reading, mathematics, and spelling. Art education has been labeled a "frill" by many educators, perhaps because of the lack of empirical evidence to show the value of art in fostering the intellectual development of each individual. Although the field of psychology has long recognized that art provides feedback regarding the thinking process of the child, this source of information has been largely overlooked in the field of education. This section of the chapter is divided into two subsections: theories of children's art development, and related research studies on the subject of children's art.
Theories of Children's Art Development

Historically, Ruskin, in The Elements of Drawing (1857), was the first to call attention to the educational possibilities of drawing (Read, 1958). The work of Ruskin inspired a teacher in England, Ebenezer Cooke, to examine the teaching of art in the schools. Cooke and James Sully, a prominent English psychologist, examined and classified the drawings of children aged two through six. According to Read (1958), this pioneer work of Cooke and Sully became the basis for many later schemes for classifying children's stages of drawing, namely those of Levinstein (1905), Kerschensteiner (1905), Stern (1910), Rouma (1913), Luquet (1913), Krotzsch (1917), Burt (1922), Wulff (1927), and Eng (1931).

Gradually, according to McFee (1961), the following five major theories of child art evolved: naive realism theory, the visual and haptic theory, age-based developmental theory, intellectualist theory, and perceptual theory. The age-based developmental theory attracted the attention of a great number of art theorists and there is a substantial amount of literature describing the stages of children's art. For this reason the work of the developmental stage theorists is reported in greater detail than the work of the other theorists. Also, there has been much controversy between the intellectualist and
perceptualist theorists. For this reason, following the
description of these two theories, the controversy has
been presented in some detail. The following, then, is
a description of the five major child art theories with
an emphasis upon age-based developmental theory and also
upon the intellectualist-perceptualist controversy.

The naive realism theory is based upon the work
of Arnheim (1954) who claimed that the image of the object
perceived in the mind is not different from the actual
object itself. He felt that the major difference between
child art and adult art is due to the differences in motor
coordination.

The visual and haptic theory is based upon the work
of Lowenfeld (1947) who classified people, generally,
according to two artistic types: (1) the visual type who
is most dependent upon his total visual environment, and
(2) the haptic type who is most dependent upon his own
feelings. The visual type is more of a spectator, whereas
the haptic type sees himself as active in the environment.
These two attitudes result in two distinctly different
types of art representation.

The developmental stage theory is based upon the
hypothesis that the particular stage which a child has
reached is a matter of development, dependent in part upon
experience (Brearly, 1969). The literature which describes
the stages of children's art is mostly anecdotal in
character (Eisner, 1967), and the positions taken by the various theorists show similarities as well as differences. The following representative samples of developmental stages are taken from the work of such noted art theorists as Lowenfeld (1947), Kerschensteiner (1905), Burt (1922), Griffiths (1935), and Kellogg (1955).

Lowenfeld, in his classic work entitled *Creative and Mental Growth* (1947), divided stages of art development into five categories: scribbling, pre-schematic, schematic, dawning realism and pseudo-naturalistic. His theory is the most widely used theory in art education, according to McFee (1961), and for this reason it is stated here in more detail than the others that follow.

According to Lowenfeld, the scribbling stage (age 2-4) is characterized by haphazard line formation, or "disordered scribbling." This disorder is followed by the child's awareness that there is a relationship between the marks on the paper and the motion of his hand, which then becomes "controlled scribbling." The next important step occurs when the child begins to attach a verbal label to the visual representation, which is referred to as "naming of scribbling."

The pre-schematic stage (age 4-7) is characterized by the first representational attempts to portray people or objects. It grows directly from symbols which the child used during the scribbling stage, such as a circle
to represent the head of a human figure and straight lines
to represent arms and legs. In this stage, the parts of
the drawing lose their meaning when separated from the
whole configuration.

The schematic stage (age 7-9) is characterized
by the schema, or concept, which the child has developed
and which he uses repeatedly to represent a person or
object. Three principal departures from the schema dur­
ing this stage include exaggeration of significant parts,
omission or change in size of suppressed parts, and change
of shape for parts which have emotional significance to
the child. It may be noted here that the term "schema"
originated with Sully in 1895 and was subsequently adopted
by other researchers (Read, 1958).

The dawning realism stage (age 9-11) is referred
to as "The Gang Age" and is characterized mainly by a
growing awareness of self, surroundings, and one's rela­
relationships to others. Therefore, this growing awareness
is reflected in the visual representation by, among other
things, a different use of space, overlapping of forms,
and concern with detail.

The pseudo-naturalistic stage (age 11-13) is re­
ferred to as "The Stage of Reasoning" and is characterized
by a shift from the process to an increased awareness and
emphasis upon the final product. The visually minded
person sees himself as spectator in the environment, whereas the one of haptic orientation sees himself as involved in the environment. This difference results in two very distinct modes of representation.

Prior to the work of Lowenfeld, Kerschensteiner (1905), who was among the earlier researchers of this century, classified 100,000 drawings and arrived at three stages of development. According to Griffiths (1970), his stages are described as follows: first, the child draws what he knows of an object without direct observation of the object at the time of the drawing; second, the objects are studied and copied by the child; and third, there is an attempt by the child to portray three-dimensional space. Kerschensteiner's stages two and three correspond to Verworn's (1907) ideoplastic stage and physioplastic stage (Harris, 1963).

In contrast to Kerschensteiner's three stages, Burt (1922) listed seven stages of development in children's drawings and assigned an age range to each stage. According to Read (1958), these stages include the following:

1. scribble stage (age 2-5)—subdivided into purposeless pencillings, purposive pencillings, imitative pencillings, and localized scribbling.
2. line stage (age 4)—the human figure becomes the favorite subject with a circle for the head, dots for eyes, and a pair of single lines for legs.

3. descriptive symbolism stage (age 5-6)—the human figure becomes a repeated pattern or "schema" which is different for each child.

4. descriptive realism stage (age 7-8)—the child tries to communicate all that he remembers or all that interests him in a subject, and the "schema" becomes more true to detail.

5. visual realism stage (age 9-10)—the child moves from the stage of drawing from memory and imagination to the stage of drawing from natural surroundings.

6. repression stage (age 11-14)—the child's attempts at visual representation are laborious and he becomes easily discouraged.

7. artistic revival stage (early adolescence)—drawings are used to tell a story, and girls tend to work with color, form and line, while boys tend to use drawing as a technical and mechanical tool.
Griffiths (1935) characterized eleven stages of development in children's drawings. Her work is unique in that she did not assign an age range specifically to each category, but described each category in precise detail. She claimed that the child does not pass smoothly from one stage to another in his progression but, rather, fluctuates back and forth between stages. The eleven stages are as follows:

1. undifferentiated scribble stage—the child receives apparent pleasure from rhythmical movement.

2. rough geometrical shape stage—circles and squares usually appear first and are sometimes given a name by the child.

3. combination of lines and squares stage—the circle is not yet incorporated into the combination of lines and squares.

4. combination of circles and lines stage—the representation for the human figure begins to emerge.

5. juxtaposition of many objects stage—objects are generally drawn quickly and are often named but are not recognizable.

6. tendency to concentrate on one object at a time stage—more care is taken with detail.
7. further juxtaposition stage—clear association is present and work is recognizable.

8. partial synthesis stage—some items are shown in relation to each other.

9. pure picture stage—every item actually represented belongs to a theme and an attempt is made to show relationship.

10. multiplication of picture stage—the child repeats the same picture seemingly for the pleasure it gives to him.

11. development of a theme stage—a series of pictures are drawn to depict a story.

The twenty-year study of Rhoda Kellogg (1955) dealt mainly with scribbling, the first developmental stage of drawing. She studied one million drawings of young children in pre-school and public schools. From these drawings, she singled out twenty basic scribbles. Her study of the scribblings of two-year olds revealed that to fully understand the subsequent scribblings of children over the age of three, one should have knowledge of his previous attempts at visual representation. Thus, her work clearly showed that there is a developmental aspect within the scribbling stage, which most researchers have classified as a general sub-stage. According to Lowenfeld (1947), scribbling is a cross-cultural phenomenon. That
is, children the world over begin their visual representation by the act of scribbling.

The intellectualist theory is based upon the hypothesis that the child draws what he knows and not what he sees. For example, a child knows that an automobile has four wheels and will incorporate all of the wheels into his representation of the automobile, regardless of whether he places them side by side or on the four corners of the automobile symbol in an aerial view.

The perceptual theory is based upon Arnheim's (1954) theory that the child draws what he sees and not what he knows. The perceptual theorists contend that as the child grows older he will include more detail in his representations because he notices more detail.

It can be seen that the perceptual theory is in direct contrast to the intellectualist theory. That is, the intellectualist theorists contend that the child draws what he knows, whereas the perceptual theorists contend that the child draws what he sees. The former are concerned with concepts, or objects that belong to a class, whereas the latter are concerned with percepts, or judgments which are made on the basis of the perceptual aspects of a situation.

According to McFee (1961), the work of Florence Goodenough (1924) was the basis for the formulation of
the intellectualist theory. Goodenough (1924) devised the "Draw A Man Test," sometimes referred to as the "Draw A Person Test," which is used to measure intelligence by the degree of detail and correctness of relationships which the child incorporates into the human figure. Children with a higher IQ tend to be able to incorporate more details, and this is related to their concept formation, or what they know. According to Read (1958), the discussion goes as far back as Sully (1896) who stated:

The child's eye at a surprisingly early period loses its 'primal innocence,' grows 'sophisticated' in the sense that instead of seeing what is really presented, it sees, or pretends to see, what knowledge and logic tell it is there (Read, 1958, p. 136).

Similarly, Luquet (1927) spoke of "abstract elements which only have existence in the mind of the child" (Read, 1958, p. 136).

Again, according to McFee (1961), the work of Arnheim (1954) was the basis for the formulation of the perceptual theory which is based to a large degree upon research in Gestalt psychology. This school of psychology claims that the response of an organism to a situation is a complete and unanalyzable whole, rather than a sum of the responses to specific elements in the situation.

In an attempt to clarify the theoretical argument, Brearly (1969) made the following contribution:

It has sometimes been suggested that at the stage of intellectual realism children paint 'what they
know' while at the stage of visual realism children paint 'what they see,' in other words, that in the former stage concepts, and in the latter stage perceptions, are expressed. This would be paradoxical and would constitute a true regression, for developmentally percept precedes concept (Brearly, 1969, p. 46).

In a further attempt at clarification Brearly added that at the stage which Piaget calls 'intuitive' (age 5-7), a child makes judgments on the basis of perceptual aspects of the situation. For example, if the length of clay or height of a liquid container which a child sees causes him to be influenced in his judgment, he has not yet acquired the concepts of conservation necessary for an understanding of mathematical relationships. She then made the following analogy:

Similarly in children's expressive work it is the stage of visual realism which is conceptual and the preceding stages which are perceptual, not the reverse. Children's work at the stage of visual realism seems more naturalistic, more like 'what they see,' precisely because their spatial concepts have developed to the point where they can reconstruct objects in relation to two-dimensional and three-dimensional coordinates, and can therefore produce pictures which have perspective (Brearly, 1969, p. 46).

Piaget's (1963) stages of intellectual development have proved useful to art educators in the theoretical discussion regarding the intellectualist and perceptual theories. Piaget has singled out three stages which reflect the growth in the understanding of spatial relationships as shown in children's use of pictorial space.
According to Brearly (1969), the three stages named by Piaget, after the stages of art theorist Luquet (1913), are:

1. synthetic capacity stage— the child of preschool and early years makes images that appear partial and fragmented. Spatial relationships of proportion, distance orientation and perspective are neglected during this stage.

2. intellectual realism stage— the child of age six paints not what he sees, but what he knows to be there. It is not uncommon in this stage for a child to portray a face in profile, and yet to incorporate two eyes into the figure.

3. visual realism stage— the child of age nine reflects his increased knowledge by a more realistic relationship of objects in space in his visual representations.

From this it can be seen that Piaget's work does not lend support exclusively to the intellectualist theory nor to the perceptual theory, but to the developmental theory in general.

In summary, while this presentation is by no means complete or exhaustive, it summarizes theories of children's art, acquaints the reader with the work of certain theorists, and shows the controversy which has existed for
many years between two of the theories, namely, the intellectualist and perceptual theories. When all factors are considered, only a very general concept of art growth can be formulated. As McFee concluded: (1) probably children scribble before they invent symbols; (2) these symbols become more definitive as the children gain more experience; and (3) the symbols approach cultural realism when such factors as motor, perceptual and cognitive skills, as well as conditions in the environment, allow them to do so. The nature of the symbols which the children invent is related to "their total biopsychological-cultural experience" (McFee, 1961, p. 159). The most persistent and widely accepted view of the child development aspect of art education is one in which the child is considered as being able to realize his potential if the environment in which he lives and works is stimulating and supportive (Lowenfeld, 1947).

Studies of Children's Art

The field of art evaluation has not attracted a large group of investigators, and there are few empirical studies. Consequently, there is no systematic approach to the evaluation of children's art and therefore there is a lack of continuity along any one particular base. The foundation of research in art evaluation has yet to be constructed. The following is a discussion of some
general studies which can be classified as relating art to personality and development. These studies are presented in chronological order.

An early study by Ricci (1887) maintained that the child makes a description in drawing just as he would make in words. Like other early investigators, Ricci did not provide a systematic description of the thousands of children's drawings that he studied (Eisner, 1967).

Barnes (1892), in a more systematic study of children's drawings, reached the conclusion that "drawing for young children is a form of language and that the graphic forms the child uses constitute his visual vocabulary" (Eisner, 1967).

For the study of children's drawings, Claparede (1907) outlined a plan to determine the relationship between aptitude in drawing and general intellectual ability. From Claparede's plan, Ivanoff (1909) devised a method for scoring children's drawings. Using a six point scale, drawings were rated on three variables: (1) sense of proportion, (2) imaginative conception, and (3) technical and artistic value. Equal weight was given to each of the three criteria. Ivanoff then compared his ratings of the children's drawings with teachers' ratings of the general ability, achievement in academic subjects, and certain moral and social traits of these same children. He found that in most instances there was a positive
correlation (Harris, 1963).

According to Harris (1963), Katzaroff (1910) used the drawings that Ivanoff had collected to determine which subjects were most frequently drawn by children. His findings were in agreement with Maitland (1895) who found that the human figure was the most popular subject drawn by children up to the age of ten years. Also, according to Harris (1963), the early literature (Lukens, 1896; Ballard, 1912; Luquet, 1913) shows that children do draw the human figure by preference.

A study entitled "Easel Painting as an Index of Personality in Pre-School Children" (Alschuler and Hattwick, 1943), found that young children use crayons as a medium for expression of ideas, whereas they use easel painting as a medium for expression of feelings. Crayons lend themselves more easily to line and form, and children tend to label their crayon representations and show them to adults more often than they do their easel paintings. The investigators also discovered that when children painted, their use of space was an indicator of their reaction to the total environment. For example, they found that children who did not function freely in their total environment, who limited themselves to either one or two toys or to a single playmate, were the children most likely to outline a narrow area of the page and to
paint within that space. Lowenfeld (1947), who also had noted this spatial relationship phenomena, found that the remedy for this situation was to expand the child's sphere of experiences. The result of this action was a corresponding expansion in the child's use of space when drawing.

A second study by Alschuler and Hattwick (1947) attempted to determine the relationship between the personality or social behavior of the child and the form and content of the child's drawings. They found that as children mature they move away from pure self-expression and focus upon literal representation in their drawings.

Katz (1944), in a study which related child development and art, found that all children tested in grades two through six tended to prefer traditional types of paintings to modern paintings. Younger children showed less preference for traditional paintings, but preference for traditional paintings increased with age. Katz also found that traditional paintings of portraits were preferred to modern paintings of portraits where the human figure was distorted.

The following studies, presented in chronological order, show that there was a shift during the 1960's from investigation which related art to personality and development, to investigation which related art and cognition.
The Toronto Study was an attempt to examine both the affective and the cognitive aspects of development. The study, entitled "Study of Achievement: An Outline of a Longitudinal Study from Junior Kindergarten Through the Elementary Grades" (1966), was conducted by the Research Department of the Toronto, Ontario, Canada, public schools and extended over a period of seven years. The subjects of the study were 8,695 children enrolled in junior and senior kindergarten who were followed through grade six. Children were given an intelligence test, a reading test, and several other standard measures. The general findings were that the positive effects of junior kindergarten superceded those of the senior kindergarten until grade four, at which time the groups equalized in level of achievement. In addition, the "Draw A Classroom Test" (MacKinnon, 1960), an instrument devised for the study, was administered to all subjects. Children were given paper and crayons and then were asked to draw their classroom. Next, each child was asked to verbally describe his picture, and his words were recorded on the face of the drawing. After a four to six week time lapse, the entire procedure was repeated. The purposes of the test were to permit the researchers to observe the world in which the child lived and to determine how this world was influenced by school. The "D.A C.T." enabled the researchers to obtain information about the child's concepts and ideas.
in the mental, emotional and social areas of growth. With the aid of a forty-two page manual, the test was scored in four categories: (1) use of space, (2) persons included in the drawing, (3) objects included in the drawing, and (4) constants included in the drawing, such as the floor and lights. The researchers concluded that individual characteristics of each child that may affect the validity of this measure include innate artistic talent, eye-hand coordination, and ability for expression through the medium of drawing and verbal expression.

One of the most significant studies of the late 1960's was the Eisner (1967) study, "A Comparison of the Developmental Drawing Characteristics of Culturally Advantaged and Culturally Disadvantaged Children." Eisner noted that since the early 1960's there had been much research regarding culturally disadvantaged children, but not in relation to their art work. Therefore, he felt that it would be useful to compare the drawing development of culturally disadvantaged and culturally advantaged children. He hypothesized that the disadvantaged child might not be as handicapped in art as he was in reading and mathematics since his environment tended to be rich in tactile, aromatic and visual phenomena. The subjects of the study were 1,093 children selected from grades one, three, five and seven to insure a developmental range. Each child was instructed to draw with crayons a picture
of himself and his friends playing in the school yard, an experience which was considered common to the entire sample. In addition, a reading measure was administered to the subjects. The results of this study did not support Eisner's hypothesis that culturally disadvantaged children might not be as handicapped in art as they were in reading and mathematics. He found that the culturally disadvantaged group began to employ the same drawing technology in fourth grade as that used by the advantaged group in first grade. In other words, it took four years for the disadvantaged group to draw at a level that approached the performance of culturally advantaged first graders. As a result of these findings, Eisner called for more empirical studies which relate art and cognition. He pointed out that "a psychology of art, one which accounts for, predicts and controls artistic learning specifically, has yet to be formulated" (Eisner, 1967, p. 2). He also felt that art educators were more concerned "with the poetry of art than with the precision of science" (Eisner, 1967, p. 3). To facilitate his study of the drawing development of disadvantaged children, Eisner found it necessary to construct his own evaluative instrument. In fact, the significance of the Eisner study in the area of art research lies in his successful construction of a scale capable of classifying characteristics
found in the child's use of pictorial space. Regarding the lack of art evaluation instrumentation, Eisner stated:

   A review of the relevant research indicates that although there is a great deal of literature describing stages of children's art there are few empirical studies which describe in statistical terms such variables as the modal characteristics of children's drawings at various ages, the variability found at these age levels, the differences, if any, between the sexes regarding drawing characteristics, the special qualities produced in drawings by various sub-cultures within a national culture, the rate of change in drawing characteristics over time or the influence of environmental conditions on drawing characteristics.

   With the exception of a scale used by Lewis (1962), to my knowledge no scale has as yet been published that can be used easily and objectively by researchers or teachers who are interested in the variables identified above. There is at present no standardized measure of artistic performance published which presents norms for subjects differing in important regional, educational or ethnic characteristics. And while the major goal of art education is not simply to assess child development in art, it appears reasonable and useful that members of the field of art education have at least rudimentary tools that describe in relevant ways those characteristics of thought and behavior with which they are concerned (Eisner, 1967, p. 21).

   This scale developed for the Eisner study, The Eisner Visual-Verbal Spatial Representation Scale, was used for evaluating the drawings in the present study.

   In the 1970's there has been an increased attempt to relate art to cognition, particularly to language development. Much of the literature available on education of children from lower socioeconomic groups during the early 1970's focuses upon the need for language competency and concept development, as these are considered
essential tools if children are to be successful with academic subjects such as reading and mathematics.

Mickelson and Galloway (1972) suggested that art expression might be used to facilitate the development of verbal expression of disadvantaged children. In their study entitled "Art and the Hidden Vocabulary of Indian Children," the researchers participated in a four-week pre-kindergarten, pre-school orientation program for Indian children in the southern region of Vancouver Island, British Columbia. In an attempt to facilitate language expression, the children were given ample opportunity to paint at an easel, after which they were asked to tell what they had painted. Mickelson and Galloway categorized the children's initial verbal descriptions as simply naming of the object, sometimes with only one word such as "house" or "sun." After four weeks, the investigators concluded that the children's language had grown in complexity as a function of the interaction between art and language. They stressed that the "hidden vocabulary" of the children would not have been realized if their thoughts had not been released through the interaction of their art work and verbalization (Mickelson and Galloway, 1972, p. 29).

The relationship between visual and verbal education was further explored by Mills (1973) in a study entitled "The Effect of Art Instruction Upon a Reading
Development Test: An Experimental Study With Rural Appalachian Children." The intent of the investigator was to attempt to influence children to include more details in their drawings and to determine the immediate effectiveness of this particular method of teaching art upon the area of reading development. The sample used in the study consisted of the twenty-six girls and twenty-six boys in the first grade of a rural Appalachian school. The entire group was randomly divided into treatment and control groups. On each of ten consecutive school days, the treatment group was taught an art lesson that stressed the inclusion of details. The control group received no formal art instruction during this period. Pre and post testing on a reading measure revealed that only the treatment group showed a significant increase in reading scores. Mills concluded that children's reading development can be improved through art lessons that stress the inclusion of details, but he cautioned that this should not be the only type of art education in the elementary school. Additionally, he proposed that the role of the visual arts in the total process of school learning should receive further investigation.

The Cromer (1973) study explored the relationship between visual and verbal education with an emphasis upon the outcome of the visual aspect, rather than the verbal aspect. The study, entitled "Verbal Language Conditions
as a Determinant of Aesthetic Performances," was undertaken to determine whether verbal language, functioning as a condition during the process of creating an art product, significantly affected the overall quality of that art product. The ninety-six subjects, art students in a junior high school setting, were motivated to do an art activity and then were divided into three groups. During the process of creating, group one was exposed to a type of inductive thinking, group two was exposed to a type of deductive thinking, and group three received no dialogue. Cromer concluded that verbal interaction during the process of art activity influenced, both positively and negatively, the aesthetic quality of the art products. The effects varied with types of individuals and their modes of thinking. Cromer suggested that further research be conducted to determine the best type of verbal language conditions to be used during the process of art activity.

Summary

In this section which deals with theories and studies in children's art, the history of research in art education was traced through the following: (1) formulated art theories—naive realism, visual and haptic theory, developmental stage theory, intellectualist theory and perceptual theory; (2) early studies which were mainly anecdotal in character; and (3) more recent empirical
studies which explored the relationship of art, language and cognition. It was noted that there is a lack of continuity in art research. Also, insofar as the process of art education is concerned, there is a general lack of knowledge which has been gained through formal experimentation (Ecker, 1973). The field of art evaluation has not attracted a large group of investigators and consequently is in the pioneering stage. In the general educational climate of the 1960's, art was linked to cognitive development, causing art education to focus upon the content of art and its effect upon reading achievement and language development. As a result of this focus, The Eisner Visual-Verbal Spatial Representation Scale was devised. This standardized measure was a significant contribution from the art research in the 1960's and should facilitate more empirical research. However, the need for other art evaluation measures is still present. Rating scales which can measure and predict artistic learnings have yet to be devised.

The Function of Child Play

There is a growing body of research which asserts the value of play in cognitive development (Hartley, 1952; Read, 1971; Isaacs, 1972; Moustakas, 1974). The natural play of children is a suitable medium for the promotion of ego development, especially for the functions essential
for cognitive growth (Omwake, 1963).

The changing attitude in the literature regarding the function and significance of play, according to Sutton-Smith (1968), can be attributed in part to two successful theories in the behavioral sciences. These theories, both of which were derived from games, include the probability theory, derived from games of chance, and the mathematical games theory, derived from games of strategy.

This section on the function of child play is divided into three sub-sections: (1) an historical overview of child play; (2) theories of child play which include classical theories, psychoanalytic theories, and cognitive theories; and (3) related studies in the field of child play.

**History of Play**

With certain notable exceptions, throughout much of recorded history man has been disinterested in the play of children, since most children were trained very early for work (Singer, 1973). In accordance with this view, Sutton-Smith (1967) claimed that it was because of the key role of work in our industrialized society that the function of play had been neglected.

Interestingly enough, some evidence of play has been recorded through the medium of art. The famous sixteenth century painting by Peter Bruegel entitled
"Children's Play" has more than fifty games of childhood as its subject matter. Another painting, "One Hundred Children at Play," attributed to the Chinese Sung Dynasty, shows much evidence of sociodramatic play (Singer, 1973).

Plato and Aristotle are both cited as among the first to recognize the practical value of play. Plato suggested giving miniature tools to those youngsters who were later to become builders. Similarly, Aristotle felt that children should be encouraged to play at what they were later to do seriously in adulthood (Millar, 1973). And Froebel, educational reformer of the eighteenth century, also stressed that the toys which children selected could be used to capture their attention and would help the children to develop their capacities (Millar, 1973).

According to Axline (1947), play is considered a natural medium of expression for the child. Omwake concluded that "children play and work for the fun of it" (Omwake, in Almy, 1968, p. 59). Omwake (1963) also made the distinction between two types of play--that which is self-initiated and self-inspired, and that which is prescribed for the child by an adult. Those who must decide on a balance between spontaneous play and structured play will find little to guide them in either educational or psychological research, according to Almy (1968).
Theories of Child Play

Theories of child play fit rather neatly into three categories: classical theories, psychoanalytic theories, and cognitive theories. These categories provide the structure for this section of the chapter.

Classical Theories

Herbert Spencer (1873), in *Principles of Psychology*, described his theory of play as surplus energy. To him, play was the expression of exhuberant energy which the child was able to dispel through play. Today this theory has been discounted since it is well known that children do continue to play even though they are tired and have no energy surplus.

In contrast to the surplus energy theory, there is the relaxation theory of play which was formulated in the mid and late nineteenth century (Millar, 1973). According to Gilmore (1966), proponents of this theory, namely Lazarus and Patrick, saw play as a method whereby spent energy could be replenished. Play was viewed as a means of dissipating the inhibition built up from the fatigue which comes from performing tasks that are relatively new to the organism (Sears, 1972). Play as a recuperation from work is seen today as an early, simple-minded explanation (Millar, 1973).
The recapitulation theory of play, formulated by G. Stanley Hall (1904), American professor of psychology and pedagogy, essentially meant that children act out, through play, the interests and activities of their ancestors. This theory, although discounted by geneticists, served to stimulate early interest in play (Singer, 1973).

Karl Groos (1896), German professor of philosophy and a major figure in the development of research on play, advanced his theory of play as the practicing of skills and manipulation of objects that the child would later use for functioning in actual life experiences. He developed a play classification theory that is comparable to those in use today. Groos arrived at this theory by observing his own children (Singer, 1973).

Psychoanalytic Theories

Beginning with Freud at the turn of the century, much writing has been done in the psychoanalytic school on the subject of play. Freud claimed that the play of children did not occur by chance, but rather, was determined by the individual's feelings and emotions (Millar, 1973). Freud felt that play represented wish-fulfilling tendencies as well as the need for mastery (Singer, 1973).

Other writers in this field (Waelder, 1933; Erikson, 1951; Peller, 1954; Frank, 1955; A. Freud, 1965)
viewed child play as reflecting basic wishes and conflicts, frequently serving as a catharsis for the conflicts. The pre-school child who has had an exciting day at the zoo or a painful experience with the dentist may have difficulty incorporating these experiences into reality, and therefore plays in the microsphere of toys (Erikson, 1963). Through play the child can relive a pleasant experience or relieve pressure caused by a painful incident (Peller, 1954; Erikson, 1963; A. Freud, 1965); the child controls the experience and regulates the amount of anxiety to be integrated emotionally (Wolfgang, 1973). Whatever the play solution, the child is in command, and he changes from an active to a passive role by assuming ego control of the situation (Waelder, 1933).

Play therapy, currently used by some psychologists (Axline, 1947; Moustakas, 1974), may be thought of as a set of attitudes through which children learn to express themselves fully, achieving in the process feelings of security, adequacy, and worth. The three basic attitudes of child-centered play therapy are faith, acceptance and respect (Moustakas, 1974). It is useful to make direct connections between play problems and school learning problems, since it appears that many of the roots of later learning problems can be detected and remedied in the play learning situation by a process that is akin to play tutoring (Omwake, 1963).
Cognitive Theories

Jean Piaget (1963) worked out a play theory using the cognitive framework. His theory of play is closely tied to his theory of intellectual growth (Sears, 1972) in that he views the child as working out two fundamental characteristics of his experience and development, namely accommodation and assimilation (Singer, 1973). Accommodation represents an attempt on the part of the child to imitate and inter-act with the environment, whereas assimilation represents an attempt to integrate outside information into the existing schemata (Singer, 1973). According to Wolfgang (1973), play is defined as an imbalance in which assimilation is dominant over accommodation. When the reverse is true, or when accommodation is dominant over assimilation, the activity is described as imitation.

Schactel (1959), in accordance with Piaget's theory, defined repetitive behavior of children as representing a gradual method of integrating new information into a limited background, rather than viewing it as a mastery of anxiety (Singer, 1973).

Some researchers describe play as encompassing certain developmental stages. Piaget, best known for his theoretical stages of intellectual development (sensorimotor--0 to 2 years, preoperational--2 to 7 years, concrete operational--7 to 11 years, and formal operational--
11 years and above), describes corresponding stages of play (Piaget, 1951):

1. **Sensorimotor play**—This form of play begins in the first year and continues throughout life. With increased awareness on the part of the child, his behavioral reactions come under control of his internal processes.

2. **Construction**—This form of play involves the child's reproduction of a model through the use of materials. For example, the child instead of simply handling bricks, now begins to build or construct something.

3. **Symbolic play**—This form of play involves imitation or mirroring of the mother (Mahler, 1967) and is the precursor of identification, according to Wolfgang (1973). In this stage, play is the child's reality (Phillips, 1969). Symbolic play is pure assimilation and repeats and organizes the child's thinking in terms of images and symbols which he has already mastered (Sears, 1972).

4. **Games-With-Rules**—This form of play appears at school age and continues throughout life. The new social awareness at this stage of development enables the child to overcome his past egocentric nature and to adapt to cooperative
limits (Wolfgang, 1973). The child must now accept pre-arranged rules, and adjust to them.

The stages of play formulated by Smilansky (1968) are in accord with those of Piaget. Smilansky labeled her play stages as: (1) functional play, (2) constructive play, (3) dramatic play, and (4) games-with-rules.

According to Singer (1973), most of the current theories in play research are still far too general and lack sufficient basis in the type of formal research which includes systematic observation under controlled conditions. In short, there has been a minimum of formal experimentation and observation in this area.

Related Studies in the Field of Child Play

As stated previously, there has been a minimum of formal experimentation in this area. The only study involving play and reading was conducted by Bills (1948), according to Wolfgang (1973). Bills' subjects were third graders who read below grade level and received remedial reading assistance. From these subjects, Bills established a treatment and a control group. The treatment group received a non-directive play therapy in addition to the remedial reading help; the control group received remedial assistance only. Upon retesting at the close of the study, Bills found that the group which received the play treatment had attained reading scores which were
significantly greater than those of the control group.

The study by Smilansky (1968), entitled The Effects of Sociodramatic Play on Disadvantaged Children, was the pivotal point for an increase in play research by educators (Eifermann, 1971; Sears, 1972; Lindberg, 1973; Wolfgang, 1973). Smilansky found that children in Israel from lower socioeconomic groups played very little and did not participate in sociodramatic play. She defined sociodramatic play as play behaviors which develop creativity, as well as intellectual and social growth.

Eifermann (1971) challenged Smilansky's findings. He discovered that Israeli children, much like those involved in Smilansky's study, practiced more, rather than less, sociodramatic play after the age of five. The major difference between these two studies was that Eifermann's research was conducted in the villages and in the street environment, whereas Smilansky brought the children into an unfamiliar nursery school setting (Wolfgang, 1973).

In Sears' (1972) study, entitled "The Relationship Between Sociodramatic Play and School Achievement of Second Grade Low Socioeconomic Status Black Children," no significant correlation was found between IQ and level of sociodramatic play.

Wolfgang (1973) compared first grade advanced readers and delayed readers in terms of play levels which
they attained. He concluded that all of the advanced readers attained high levels of symbolic play. However, the ability of advanced readers to sustain play at the dramatic level, the number of toys that they used, and the number of abstract wooden toys that they chose were significantly less than that of the delayed readers.

Summary

In this section which deals with the function of child play, it was noted that historically man was not interested in the natural play of children, since children were trained very early for work. The practical value of play was recognized, however, and play was endorsed as a vehicle for facilitating the training of the child for his life work. Thus, prescribed play was distinguished from self-initiated play, and several classes of play theory emerged, namely classical, psycho-analytic and cognitive theories. At present, there is an increase in research studies which deal with child play in relation to cognitive development. The new interest can be attributed, in part, to the research from the behavioral sciences which promoted probability theory and mathematical games theory. Also, the new interest in play can be linked to the larger interest in the general modes of both verbal and non-verbal expression which children employ, and to the relationship of these modes of
expression to cognitive development. This subject shall be discussed in the next section.

The Inter-relationship of Art and Play as Mediums of Expression

In a review of the literature of art and play, it is important to note that it is not uncommon for educators and researchers to link art and play as stemming from a common core, that of expression. Margery Franklin (1973) claimed that symbolic art and symbolic play both depend upon and reveal a capacity for symbolic representation. She defined symbolic representation as the ability to relate two aspects of experience while, at the same time, making a distinction between that which is symbolized and the form that one utilizes for the symbolization. The form could be either art or play. Other researchers and educators have seen a common link among art, play and language, since all three are considered to be means of expression. Once this expressive link had been established, it became possible to take the relationship one step further, and to relate art, play and language to the process of reading. This section, therefore, will be divided into three parts: (1) art and play; (2) art, play and language; and (3) art, play, language and reading.
Art and Play

In mid-nineteenth century when Spencer formulated his surplus energy theory of play, he noted that it was akin to the philosopher Frederick VonSchiller's view that play was the expression of exhuberant energy and "the origin of all art" (Millar, 1973, p. 15).

Sully (1895) regarded art activity as continuous with, but not identical to, play activity. He wrote that the play impulse which manifests itself in early childhood later becomes the art impulse (Read, 1958).

Peller (1954) pointed out that the phrase "regression in the service of the ego," coined by Kris (1934) to characterize artistic activity, may well have the same application for play activity.

Similarly, Read (1958) made the case that play and art are actually an integration of the same thing, namely the child's wish to express himself. He claimed that of the two, play was the most obvious form of free expression in children.

Also, according to Franklin (1973), the representational use of materials in drawing and painting occurs some time after the use of those objects as symbols in play. Finally, the actual expression of representations through the medium of drawing, painting, and constructing go through stages similar to those characteristic of symbolic play (Brearly, 1969).
Art, Play and Language

In the literature, both art and play are referred to as languages. McFee (1961) made the statement that, "art is a language with which the child communicates his experience" (McFee, 1961, p. 71). His behavior in art is not unrelated to his other behaviors.

Barnes (1892) claimed that "drawing is for the young child a language, a means of expressing ideas" (Eisner, 1967, p. 23). Regarding the work of Barnes, Eisner wrote:

Perhaps the most significant conclusion that Barnes reached is that drawing for young children is a form of language and that the graphic forms the child uses constitute his visual vocabulary (Eisner, 1967, p. 24).

Diamondstein claimed that young children "speak through forms in art even before they are able to express themselves in words" (Diamondstein, 1974, p. 23).

Lowenfeld (1947) made a brilliant analogy between art and language when he equated the beginning stages of art, scribbling, with the beginning stages of language, babbling.

Similarly, play is considered a language, according to Frank (1955):

It may be useful here to think of play as a figurative language, recognizing that the child's play reveals equivalents of almost all of our familiar figures of speech--metaphor, analogy, metonomy, hyperbole, synecdoche, onomatopoea, and so on (Frank, in Almy, 1968, p. 73).
It may be that play experiences are valuable for children because they take the intermediate place between inarticulate expressions and structured language (Hartley, Frank, Goldenson, 1952, p. 7).

Erikson (1940) proposed that children use play "to make up for defeats, sufferings and frustrations, especially those resulting from a technically and culturally limited use of language" (Erikson, in Hartley, Frank, Goldenson, 1952, p. 8).

Since the late 1960's there has been a marked increase in the amount of research in the areas of language acquisition and underlying structures of language. Langer stated that semantics, which is usually associated with verbal language, may be applicable to the field of art education. She pointed out that nonverbal arts, such as visual art, also have a semantic aspect. However, the semantic mode used in the visual arts does not have the fixed, independent and generalized meanings that words do. The two basic modes of expressing meaning are through verbal (discursive) or nonverbal (nondiscursive) systems. These systems are listed below as they would apply to verbal language and visual art (Langer, in Gunter, 1971, p. 34):
Discursive
Verbal Language

1. Vocabulary and syntax.
2. Successive.
4. Fixed Equivalences.

Nondiscursive
Visual Art

1. Visual elements and principles.
2. Simultaneous.
3. Particular.
4. Relational.

According to Gunter (1971) it can be seen from Langer's semantic view of the nonverbal arts that visual art has a unique semantic system which is both parallel to and in opposition to the semantic system already established in verbal language.

Ecker (1973) agreed that the research of the contemporary linguists in identifying the underlying structures of behavior may reveal that what children say about their art could prove to be invaluable in understanding their aesthetic endeavors. He expressed a need for further research to explore the linguistic aspect of the artistic development of children.

Art, Play, Language and Reading

According to Monroe (1964), it is through language that we become acquainted with the child. We may make inferences about a child through his play or art activities, but it is through the medium of language that the child formulates his thoughts and feelings. When a child is expressing ideas in his own words, we learn what
concepts are attached to the words, what kinds of ideas the child is attempting to express, and how successful he is in his attempt. It is his oral language skill which is the basis for learning to read.

In agreement with this point of view, Jansky and deHirsch (1972) indicated that the literature has abundant references to the relationship between receptive and expressive aspects of oral language and reading.

Katz and Deutsch (1963), in describing the complexity of reading, explained that a child must associate oral language (the teacher's voice) to a visual cue (the printed word). This is only one aspect of the visual-verbal relationship of the reading process.

Another aspect of the visual-verbal relationship is the scribblings that children make that play an important role in mental development. According to Rhoda Kellogg (1974) the eye and brain activity that results from scribbling builds the foundation that is the prerequisite for learning to read and write. In addition, scribbling provides enjoyable visual, motor and mental stimulation and Kellogg claims that good scribblers generally become good readers. She is convinced that scribbling is the child's mind-play, not simply his hand-play. Spontaneous art develops the mind for learning to read the printed word, or language. The child whose mind has been developed
through drawing to see a variety of forms usually learns to read and write easily and well (Kellogg, 1974). There appears to be a direct correlation between the child's ability to show relationships in his drawing and his perceptual readiness to see relationships between letters and words. The horizontal arrangement of objects in relation to sky and ground are an indication of the child's readiness to work with the linear arrangement of the written word.

Other research which equated visual and verbal relationships includes the five year longitudinal study by Gant (1973), entitled "Visual Literacy: An Exciting Environmental Adventure." The study was designed to focus upon visual skills and aesthetic experiences of kindergarten children who were given cameras with which to photograph subject matter. The children then recorded orally, via tape recorder, what they saw. Later, a written transcription was made by an adult. The purpose was to have the children experience language visually, verbally and auditorially. The result was that the children's verbal complexity index was increased.

Lyle and Goyen (1968) compared good and poor readers on visual recognition memory. They found that recognition memory was less accurate for poor readers (Samuels, 1971).
On the other hand, Downing (1971) found that disabled readers were better at visual discrimination than the able readers. He concluded that seeing letter differences is less important than knowing when to ignore differences.

In another visual-reading experiment, Elkind, Koegler and Go (1964) used a drawing of a man made from fruit, with an apple for a head, a pear for the body, bananas for legs, and bunches of grapes for arms. This drawing was shown to elementary school children. It was found that nursery school children saw only the parts, kindergarten and first grade children saw the whole, and children at second grade level and beyond saw both the parts and the whole. From this it was concluded that success with reading requires a whole-part schematization. A good reader, according to Elkind (1966), must maintain an awareness of the independence of each individual letter and an awareness of the whole word, while remaining cognizant of their inter-dependence (Elkind and Deblinger, 1969).

Anderson and Samuels (1970), in their visual memory experiments, found that visual memory and IQ were not significantly correlated (Samuels, 1971).

Eisner postulated several ideas pertaining to the relationship among art, language and reading. Three of these were: (1) expression is a consequence of intelligence;
(2) the arts are one of man's major expressive modalities, hence depend upon intelligence; and (3) experiencing art forms requires an ability to 'read' the form, to decode what the artists have encoded (Eisner, 1971, p. 4).

In the prior statement, Eisner employed the language which is used by reading researchers (encode and decode) in an effort to describe the search for meaning in the visual arts. It is worth exploring his statements further:

The process of encoding visual symbols in the visual arts has certain parallels to the encoding processes used in discursive fields. Encoding requires not only that the artist use or create a symbol or symbols designed to represent, convey, or evoke the feeling, image, or idea he wishes to express, it also requires that the symbols be related, that they be ordered appropriately to serve the ends sought. The problem of constructing an appropriate relationship among symbols is one of establishing a syntax for them. This visual logic or qualitative syntax are the 'rules' through which visual symbols are ordered and is typically referred to as the style or pervasive quality of the work of art.

In discursive communication, syntax and symbol are highly conventionalized and readily available. As children acculturate they learn not only the conventional symbols which serve, at first, to relate the noises we call words to empirical referents, they also learn the rules through which the noises are to be related (Eisner, 1971, p. 9).

Eisner did not fail to note that there are certain differences between the symbolic and syntactical systems used in the visual arts and those employed in discursive language. He claimed that the rules of discursive
language serve to constrain radical change, whereas in the visual arts, symbolic and syntactical change is actually sought.

If, in the visual arts, certain syntactical systems are developed, it may be that the next logical step toward understanding would be "a systematic analysis of children's talk about art to match Kellogg's analysis of children's art" (Ecker, 1973, p. 62).

In summary, both art and play are viewed as having a common core, namely, the child's wish to express himself. In this sense, art and play are viewed as a communicative language. This is not unlike the spoken word and the written word which are more traditionally labeled as language. There are, however, differences in the symbolic and syntactical systems employed in the arts and those employed in discursive language.

Summary

This chapter, chapter two, has presented a review of the literature related to the topic. The chapter was divided into three parts: (1) theories and studies in children's art, (2) literature related to the function of child play, and (3) literature related to the interrelationship of art and play as mediums of expression. A brief summary appears after each section.
The preceding review of the literature has examined the complexity of child art and points to the need for measures which would systematically evaluate children's pictorial representations. From the literature it is noted that art and play have a common core, namely expression. Inherent in expression is communication, which further links art and play with verbal language (speaking) and written language (reading). If art, play, verbal language and reading can all be linked under the common title of communication, then it seems appropriate that an investigation of the inter-relationship of these four components of communication be explored. For example, if a child is developmentally delayed in one area of communication, does it usually follow that there is a lag in all four areas of communication? Is it possible that if a child received remedial attention in one area of communication, namely play, that this experience would have a noticeable effect on any or all of the remaining three areas of communication?
CHAPTER THREE

PROCEDURE

This chapter, chapter three, is reserved for a discussion of the procedures employed in the study. As noted earlier, this study was divided into two parts. Part A was concerned with acquisition of a sample of DARs and DDRs who received post-test only. Part B was concerned with the division of a sample of DDRs into two groups which were interfaced with a randomized pre-test/post-test control group design where the treatment was play facilitation. The particulars of this design and methodology are discussed in detail below.

Hypotheses

The following hypotheses were tested in this study:

\( H_{0}^{1} \) There is no significant difference at the .05 level between advanced and delayed readers of average intelligence in their use of spatial relationships in their drawing.

\( H_{0}^{2} \) There is no significant difference at the .05 level between advanced and delayed readers of
average intelligence in their verbalizations about their drawings.

$H_0^3$

There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program in relation to their reading achievement.

$H_0^4$

There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program in relation to their use of spatial representation in drawing.

$H_0^5$

There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program in relation to their verbalization about their drawing.
Part A

The division of the study included in this part is ex post facto. That is, there is no experimental treatment, but dependent variable measures were employed to investigate if differences between DARs and DDRs existed. The following section includes sample, sampling method, sources of data, and measures.

Sample

The subjects were selected from two schools which shared certain commonalities. Both schools were within the same city school district and served predominantly white neighborhoods. The families of these neighborhoods were mainly those of lower class blue collar workers, including a fair to high percentage of Appalachian residents.

The school district, located in a large midwestern city in Ohio, has a priority numbering system ranging from one through five. For a school to qualify for the one through five rank, approximately twenty-eight percent or more of the school's families must be welfare recipients. The higher the priority rank, the greater the financial support given to the school.

One of the schools selected for the study had a total enrollment of 444 students, with thirty-five percent of the families on welfare; the other school enrolled 381
students, with eighteen percent of the families on welfare. The school with thirty-five percent on welfare was classified as a mid-fourth rank priority school and was eligible to receive federal National Defense Education Act Title I funds. The school with eighteen percent on welfare did not qualify for federal National Defense Education Act Title I funds. However, both schools received special assistance in reading. Federal Title I funds made possible the provision of a language development teacher at one school and general funds from within the school district paid for the services of a special reading teacher at the other school. Both schools received support services in speech.

**Sampling Method**

The subjects were selected from the four first grade classrooms of the schools chosen for the study. The two first grade classrooms of one school enrolled sixty-one pupils, while the other school enrolled fifty-four pupils in its two first grade classes. In all, 115 first graders comprised the population for the study. All 115 pupils were tested during the month of January, 1974, with the reading section of the *Stanford Achievement Test*, Primary I, Form W. The results showed that sixteen pupils scored at or above the 80th percentile and fifty-nine pupils scored at or below the 20th percentile.
on the Word Reading Section. The *Stanford Achievement Test* is a group test that can be administered to pupils in the middle of grade one through the middle of grade two. It is designed to measure the important knowledges, skills and understandings which are accepted as desirable outcomes in the content areas.

Next, the sixteen first grade pupils who scored at or above the 80th percentile and the fifty-nine first grade pupils who scored at or below the 20th percentile in the Word Reading Section of the *Stanford Achievement Test*, Primary I, Form W, were given the *Otis-Lennon Mental Ability Test*, Elementary I Level, Form J. This test was administered to small groups of pupils in order that greater accuracy in the testing of subjects would be assured. From the sixteen first grade pupils tested who had scored at or above the 80th percentile in reading, ten pupils (six girls and four boys) scored within the 87-115 IQ range. From the fifty-nine first grade pupils tested who had scored at or below the 20th percentile in reading, fifty-five pupils (twenty-seven girls and twenty-eight boys) scored within the 87-115 IQ range. The IQ range of 90-110 that was originally designated as average was expanded to include an IQ range of 87-115. This expansion of range was necessary in order that a minimal number of DARs could be secured for use in the study.
Thus, the ten pupils selected from the sixteen who scored at or above the 80th percentile in reading and who fell within the 87-115 IQ range were identified as developmentally advanced readers (DARs). All ten DARs participated in Part A of the study. The reading percentile range of the ten DARs was from eighty to one hundred, with a mean percentile of 89.2. The mean IQ for DAR subjects was 100.4. The fifty-five pupils who scored at or below the 20th percentile in reading and who fell within the 87-115 IQ range were identified as developmentally delayed readers (DDRs). Of the fifty-five eligible DDR subjects, thirty were randomly selected and eligible for inclusion in Part A. The twenty-one with the lowest reading scores were identified for comparison with the DARs. The remaining nine subjects were reserved for participation in Part B, as explained below. The reading percentile range of the twenty-one DDRs was from one to two, with a mean percentile of 1.1. The mean IQ for DDR subjects was 100.1.

Sources of Data

Once the reading and IQ tests had been administered and the DAR and DDR groups had been established, the art and verbal data were gathered in the following manner: In a well-lighted room which was void of any external stimuli, this experimenter brought each subject into the room to a table that was equipped with 12" x 18" oaktag paper and
black felt pens. The subject was asked to try the pens on a scrap piece of paper and to select the one pen that he liked best. Once the pen had been selected, the following directions were given by the experimenter: "I would like you to draw a picture of anything you want to, and when you are finished you can tell me a story about the picture that you have drawn. You may take as much time as you need." During the process of drawing, the experimenter sat quietly beside the subject with no verbal interaction. The time required to complete the drawing task ranged from two minutes to eighteen minutes. Once the subject indicated that the drawing was complete, the experimenter asked the subject to tell a story about the picture. At this point the cassette tape recorder was engaged and the story was audio-recorded.

Measures

When the testing procedure had been completed for each of the thirty-one subjects, the drawings were rated by two art educators of The Ohio State University, using The Eisner Visual-Verbal Spatial Representation Scale. The stories about the drawings were transcribed by the experimenter and were rated by two reading specialists of The Ohio State University, using the Monroe-Rogers Quality of Ideas Scale. The analyses of these data comparing DARs with DDRs on the variables of drawing and
verbalization about the drawing are reported in chapter four.

**Part B**

As stated in the introduction to this chapter, Part B involved an experimental treatment where the fundamental design employed was the randomized pre-test/post-test control group design. The following section includes descriptions of the sample, experimental method, sources of data and measures.

**Sample**

Thirty DDR subjects were selected. Fifteen subjects were assigned to the treatment group and fifteen subjects were assigned to the control group. Included in Part B of the study were the twenty-one DDR subjects who had participated in Part A. These particular DDR subjects, along with nine additional subjects, were randomly assigned to the treatment and control groups. The treatment and control groups were matched on the basis of sex and school environment. That is, DDRs were chosen and assigned in such manner that a given school contributed as many subjects to the control as to the treatment group and, further, that a given school contributed an equal number of children of the same sex to both control and treatment groups. Thus, subjects were distributed so as
to place equal numbers of boys and girls in each group. As shown in Table 1, from School I there were five boys and five girls in the treatment group and five boys and five girls in the control group, making a total of twenty subjects, or ten in each group. From School II there were two boys and three girls in the treatment group and two boys and three girls in the control group, making a total of ten subjects, or five in each group. Together, there were fourteen boys and sixteen girls, or a total of thirty subjects who participated in Part B of the study.

**TABLE 1**

<table>
<thead>
<tr>
<th>DDR Subjects Selected for Treatment and Control Groups from School I and School II, Using the Variables of IQ, Reading Achievement, Sex, and School Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School I</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>School I</td>
</tr>
<tr>
<td>School II</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
</tr>
</tbody>
</table>

Thus, as subjects were originally classified as DDRs because of similar IQ and reading achievement, the DDR treatment group and the DDR control group were matched as evenly as possible on the variables of IQ, reading achievement, sex, and school environment. As shown in Table 2, the mean IQ for the fifteen DDR subjects in the
treatment group was 100.6, while the mean IQ for the fifteen DDR subjects in the control group was 99.6. The mean reading raw score for the treatment group was 7.5; their mean reading percentile was 2.4. The mean reading raw score for the control group was 9.7; their mean reading percentile was 5.7. The nine additional DDR subjects selected for Part B of the study, in addition to the twenty-one DDRs included in Part A, were also given the drawing and verbal description tasks which were evaluated by the same judges who evaluated the subjects in Part A, using The Bisner Visual-Verbal Spatial Representation Scale and the Monroe-Rogers Quality of Ideas Scale, respectively.

**TABLE 2**

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Scores</th>
<th></th>
<th>Reading Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>IQ</td>
<td>Reading</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>15</td>
<td>100.6</td>
<td>7.5</td>
<td>2.4</td>
</tr>
<tr>
<td>Control</td>
<td>15</td>
<td>99.6</td>
<td>9.7</td>
<td>5.7</td>
</tr>
</tbody>
</table>
Experimental Method

On the basis of expressed interest, eight undergraduate education majors, all of whom were enrolled in a child development course at The Ohio State University, were chosen to serve as play facilitators with subjects of the treatment group during Part B of the study. A training session for the play facilitators was conducted by Dr. Charles Wolfgang. Early in the training session, Dr. Wolfgang outlined the general study and defined the role of play facilitator as a person who: (1) establishes rapport with an individual child; (2) allows the child to select the play activity in which he wishes to engage; and (3) through conversation and directives, guides the child's play activities from disorder into an orderly sequence of events so that the child is made aware of his actions and their consequences and can learn to choose ways to channel his energies constructively, through structured or symbolic play. Following the descriptive portion of the training session, Dr. Wolfgang conducted a demonstration play session with a subject selected at random from the fifteen subjects in the treatment group, while the volunteers observed and took notes. This was followed by a discussion period in which the play-facilitators could question and seek clarification. The volunteer play-facilitators, six females and two males,
were then randomly assigned to subjects in the treatment group.

Each play facilitator met with his assigned subjects on an individual basis for a one-half hour session, twice per week, for a period of ten weeks. During the play sessions the child could select from the following play materials: paper and crayons, clay, puppets, building blocks, and miniature-life toys such as people, household furnishings, and transportation vehicles. After each play session, the play facilitator submitted a written observation report of the session to the supervisor, this experimenter. If the child was absent, the play facilitator arranged time for a make-up session. If the play facilitator was absent, this was reported to the supervisor who made arrangements for make-up sessions. Throughout the study, the play facilitators were free to contact the supervisor at any time for advice and counsel. In addition, the supervisor observed sessions and photographed them when it did not interfere with the session. Also, during visits to the two schools, the supervisor consulted informally with the first grade teachers and with the principals regarding the progress of the study.

When the study was completed, the play facilitators met as a group with the supervisor to submit final written reports, case histories and art samples, and to discuss
the overall progress of the subjects with whom they had served as play facilitators. In addition, the play facilitators presented a panel discussion to their child development class regarding their part in the study. Finally, at the end of the study, Dr. Wolfgang met formally with the first grade teachers and principals to discuss the progress of the study at that time.

Sources of Data

The three sources of data employed in this part of the study were measures of reading achievement, drawing, and level of verbalization. During May of 1974, at the conclusion of the ten-week play-facilitation intervention program, this experimenter administered a group reading and individual visual-verbal post-test to both the treatment and control groups in School I and to both the treatment and control group in School II. The reader will recall that these sources of data were employed in the Part B pre-test segment of the study.

Measures

The reading section of the Stanford Achievement Test, Primary I, Form W, was administered as a group test to DDR treatment and control subjects. In addition, each child in the treatment group and in the control group was individually post-tested by this experimenter with the
drawing and verbal expression tasks, which were evaluated using The Eisner Visual-Verbal Spatial Representation Scale and the Monroe-Rogers Quality of Ideas Scale, respectively.

**Description of Measures Employed in This Study**

Instruments chosen for this study were: (1) Stanford Achievement Test, Primary I, Form W; (2) Otis-Lennon Mental Ability Test, Elementary I, Form J; (3) The Eisner Visual-Verbal Spatial Representation Scale; and (4) the Monroe-Rogers Quality of Ideas Scale. A description of each of these instruments follows.

**Stanford Achievement Test, Primary I, Form W**

The reading section of this instrument was administered as a pre-test/post-test measure. This particular test was selected because it has grade scores and percentile ranks which are normed for the middle of grade one (January through April) and for the end of grade one (May and June). Since the reading pre-test for this study was administered in January, 1974, and the post-test was administered in May, 1974, it seemed an especially appropriate instrument.

The first edition of this instrument appeared in 1923. According to Merenda in Buros' *The Seventh Mental Measurements Yearbook*, the Stanford Achievement Tests are
the "patriarch of the standardized achievement test batteries" and have probably been the most widely used tests of their kind over the longest period of time. Achievement measures such as the Stanford Achievement Test are generally used as batteries, either partial or complete. When single tests are administered, they are most often used in isolated instances for specific reasons. In spite of the fact that this instrument is widely used, the authors fail to inform the user that for certain tests in the battery the standard errors may be so great that the scores must be interpreted with great caution, or they may not be useful at all. The user is not given any direct empirical evidence of the stability of the individual tests in the battery nor of the battery as a whole. There is a lack of reliability data on the entire battery. Also, empirical validity data are completely lacking, though a suggestion of content or curricular validity is made by the authors (Buros, 1972, pp. 45-47).

Otis-Lennon Mental Ability Test, Elementary I Level, Form J

This instrument was devised in 1967 by Arthur S. Otis and Roger T. Lennon. It was selected for this study because the administration of the measure requires no reading on the part of the subject.

According to Milholland in Buros' The Seventh Mental Measurements Yearbook, the construction and norming
of this test shows adherence to the highest level of current standards. It is a product of exceptional merit. An alternate forms reliability estimate is given for each grade and for each age. Those for grades four and below range from .83 to .89. Standard errors of measurement average about six points below age ten. The discussion of validity is organized in accordance with the content, construct, and criterion-related categories of the 1966 Standards for Educational and Psychological Tests and Manuals (Buros, 1972, pp. 690-91).

The Eisner Visual-Verbal Spatial Representation Scale

This instrument was devised in 1967 by Elliot Eisner, art educator at Stanford University, as a result of a research study entitled "A Comparison of the Developmental Drawing Characteristics of Culturally Advantaged and Culturally Disadvantaged Children." The study was completed under Contract Number OE 6-10.027, Project Number 3086, for the Office of Education, United States Department of Health, Education and Welfare. The measure consists of fourteen visual categories arranged according to performance related to age and grade. These fourteen categories are as follows:

Category 1  No horizon line present. Morphemes "floating" not standing on the edge of the paper.
Category 2  Morphemes standing on the bottom edge of the paper. No horizon line drawn.

Category 3  Some morphemes standing on the bottom edge of the paper, others floating in space.

Category 4  Morphemes standing on bottom edge of paper and horizon line drawn.

Category 5  Partial horizon line drawn.

Category 6  Two or more horizon lines drawn.

Category 7  Horizon line drawn. Morphemes floating above horizon line.

Category 8  Horizon line drawn. Morphemes standing on horizon line.

Category 9  Horizon line drawn. Some morphemes standing on horizon line, other morphemes floating above horizon line.

Category 10  Morphemes overlap ground but do not overlap horizon line.

Category 11  Morphemes standing on bottom edge of paper and overlapping horizon line.

Category 12  Horizon line drawn. Morphemes clearly overlapping horizon line.

Category 13  Horizon line drawn. Morphemes overlapping each other.

Category 14  Unclassifiable.

For the actual pictorial scale for the fourteen categories, see Appendix A.

To determine reliability for this measure, which was based on inter-judge agreement, three procedures were used. First, the overall percentage of agreement between judges was calculated (71.65 percent). Second, the
percentage of judge agreement was calculated for each category (84 percent). Third, Pearson coefficients of correlation were computed between the categories assigned to the drawings by each judge on both independent judging and the combination of independent and joint judging. For the former, independent judging, the coefficient of correlation is .80; for the latter, the combination of independent and joint judging, it is .91. Both coefficients indicate high reliability among judges and both are significant at the .001 level of confidence. The Eisner Visual-Verbal Spatial Representation Scale underwent minimal category revisions by Dr. Lovano-Kerr, Indiana University. However, the revision has not been standardized.

Monroe-Rogers Quality of Ideas Scale

This scale was devised by Dr. Marion Monroe and Beatrice Rogers, and is outlined in the 1964 edition of their text entitled Foundations of Reading. The scale is built upon several premises, namely that: (1) oral language skill is the basis for learning to read; (2) obtaining reliable levels of language ability is a persistent problem; and (3) tests, especially reading readiness tests, investigate a child's ability to understand the language, but at beginning levels such tests are unable to show the child's individual use of language. Monroe and Rogers contend that clinical psychologists, working with speech
and language specialists, have identified certain characteristics of speech (oral language) which are most useful in describing the individual child's expressive language skills. These characteristics purportedly reflect a child's mode of thought, as revealed by the quality of his ideas. Monroe and Rogers used these speech characteristics to develop what the teacher of beginning readers needs, a systematic and simple means of recording, analyzing and rating language behavior on an individual basis.

The Monroe-Rogers scale was designed to show five varying levels of idea quality that may be found in children's use of the language. The scale was phrased carefully in order to refer as little as possible to syntactical structures. Instead, the emphasis is upon rating the quality of the ideas themselves, independent of the structure in which they are embedded. To administer the scale, the individual child is shown a drawing or picture and asked to describe what he sees. The suggested scale for quality of ideas is ranked on five levels:

**Level One**  - Ideas fully concrete. Concerned with the immediate environment. Objects and events seen as separate items. Not concerned with relationships.

**Level Two**  - Sees some objects and events in relation to each other. Relationships seen are concerned with the concrete and the here and now. Characters are related to their actions.
Level Three - Sees relationships between objects and events, including relationships of size, shape, color, use, distance and cause and effect. Begins to include in his ideas some people, things, or events farther away in time or space. Recognizes simple emotional reactions and motives of characters. Forms sensory images (visual, auditory, thermal, tactile, kinesthetic).

Level Four - Sees relationships of various kinds as Level Three, but tends to include more abstract qualities as well as the concrete and immediate. Anticipates events, deduces more complex cause-and-effect relationships and time relationships. Recognizes simple character traits.

Level Five - Ideas at Level Four, but with the addition of some evaluation and judgment. Generalizes within the limits of his experience. Makes judgments which include the consideration of abstract concepts.

The Monroe-Rogers Quality of Ideas Scale has not been standardized, so that its reliability and validity are not known. In fact, there is no scale pertaining to this subject which has been standardized.

Summary

This chapter, chapter three, has examined and discussed the design of the study and the methodology used in this study. Included were discussions of the three phases for Part A, the four phases for Part B, the instruments used in the study, and the data collection procedures.
The next chapter, chapter four, presents the results of the study and discusses these results.
This chapter, chapter four, presents the results of the analyses of the data and the discussion of the results. The chapter is divided into three sections. Sections One and Two report the results of the statistical analyses of each of the major hypotheses for Part A and Part B of the study. Section Three presents a descriptive report of some of the data from the total study, using actual samples of drawings (visual) and stories (verbal) to show the inter-relatedness of detail in children's drawings, their verbalizations about their drawings, and their reading achievement.

**Testing of the Major Hypotheses, Part A of the Study**

This section of chapter four will test the two major hypotheses proposed in Part A of the study. Part A was composed of two groups of first grade pupils--the ten DARs of average IQ who scored at or above the 80th percentile in reading achievement on the *Stanford Achievement Test*, and the twenty-one DDRs of average IQ who scored at
or below the 20th percentile in reading achievement on the Stanford Achievement Test. The reading percentile range for the DARs was 80-100, with a mean percentile of 89.2, while the reading percentile range for the DDRs was 1-2, with a mean percentile of 1.1. Both the DAR and DDR groups were administered a drawing task which was evaluated by The Eisner Visual-Verbal Spatial Representation Scale, a fourteen category measure. The mean score for the DARs was 4.6, while the mean score for the DDRs was 3.4. Both the DAR and DDR groups were asked to tell a story about their drawing, and this verbalization was evaluated by the Monroe-Rogers Quality of Ideas Scale, a five category measure. The mean score for the DARs was 2.6, while the mean score for the DDRs was 1.9. The two major hypotheses which relate to Part A of the study are stated in the null form.

\[ \text{H}_0^1 \text{ There is no significant difference at the .05 level between advanced and delayed readers of average intelligence in their use of spatial relationships in their drawing.} \]

Scores from The Eisner Visual-Verbal Spatial Representation Scale (see Appendix B) for both groups of subjects, DARs and DDRs, were analyzed using the t-test. The results of this analysis appear in Table 3. The mean score on the Eisner scale for the DARs was 4.6, which was greater than the 3.4 mean score for the DDRs. The t-value did not
reach significance \( t = 1.10; \ df = 29; \ p \leq .05 \). The \( t \) required by the table was 2.05.

**TABLE 3**

**MEAN AND STANDARD DEVIATIONS FOR SCORES ON THE EISNER VISUAL-VERBAL SPATIAL REPRESENTATION SCALE FOR DEVELOPMENTALLY ADVANCED READERS (DAR) AND DEVELOPMENTALLY DELAYED READERS (DDR)**

<table>
<thead>
<tr>
<th>Groups</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAR (n=10)</td>
<td>4.6</td>
<td>2.99</td>
</tr>
<tr>
<td>DDR (n=21)</td>
<td>3.4</td>
<td>2.82</td>
</tr>
</tbody>
</table>

\( H_0^2 \) There is no significant difference at the .05 level between advanced and delayed readers of average intelligence in their verbalizations about their drawing.

Scores from the Monroe-Rogers Quality of Ideas Scale (see Appendix B) for both groups of subjects, DARs and DDRs, were analyzed using the \( t \)-test. The results of the analysis appear in Table 4. The mean score for the DARs on the Monroe-Rogers Quality of Ideas Scale was 2.6, which was greater than the 1.9 mean score for the DDRs. The \( t \)-value of 2.27 exceeded the table value of 2.05, required for claiming significance at the .05 level of confidence. In fact, the probability of obtaining a
t-value of 2.27 is 0.031. Therefore, the hypothesis of no difference in verbalizations about their drawings between DARs and DDRs is rejected.

**TABLE 4**

MEAN AND STANDARD DEVIATIONS FOR SCORES ON THE MONROE-ROGERS QUALITY OF IDEAS SCALE FOR DEVELOPMENTALLY ADVANCED READERS (DAR) AND DEVELOPMENTALLY DELAYED READERS (DDR)

<table>
<thead>
<tr>
<th>Groups</th>
<th>M</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAR (n=10)</td>
<td>2.6</td>
<td>0.84</td>
<td>2.2*</td>
</tr>
<tr>
<td>DDR (n=21)</td>
<td>1.9</td>
<td>0.85</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05

In summary, the mean scores of DARs for both The Eisner Visual-Verbal Spatial Representation Scale and the Monroe-Rogers Quality of Ideas Scale was greater than the mean scores of DDRs. However, the difference in scores on the Eisner scale did not prove to be statistically significant at the .05 level of confidence. Therefore, for Part A of the study, the first major hypothesis of no difference in the use of spatial relationships between the drawings of DARs and DDRs cannot be rejected. On the other hand, analysis of scores for the Monroe-Rogers Quality of Ideas Scale did show a significant difference at the
.05 level between stories which the DARs and the DDRs formulated about their drawings. Therefore, for Part A, the second major hypothesis of no difference in verbalization about their drawings between DARs and DDRs is rejected.

Testing of the Major Hypotheses, Part B of the Study

This section of chapter four will test the three major hypotheses proposed in Part B of the study. Part B was composed of thirty DDRs, those students of average IQ who scored at or below the 20th percentile in reading achievement on the Stanford Achievement Test. The thirty DDR subjects, twenty-one of whom were included in Part A of the study, were divided into a treatment group and a control group with a total of fifteen subjects in each group. The groups were matched as evenly as possible on the variables of IQ, reading achievement, sex and school environment. For the DDR treatment group, the mean IQ was 100.6, and the mean reading percentile was 2.4. For the DDR control group, the mean IQ was 99.6, and the mean reading percentile was 5.7 (see Table 2, chapter three). For a description of the DDR treatment and control groups on the basis of sex and school environment, see Table 1, chapter three.

The fifteen subjects in the treatment group received a ten-week play-facilitation intervention program,
whereas the fifteen subjects in the control group received no treatment. At the end of the play-facilitation intervention period, both DDR groups were post-tested in reading with the Stanford Achievement Test and were post-tested with the drawing task which was evaluated using The Eisner Visual-Verbal Spatial Representation Scale and the Monroe-Rogers Quality of Ideas Scale. It should be noted here that during the post-test sequence of the study, the DDR treatment group was reduced in size from fifteen to fourteen subjects because of the loss of one subject.

The three major hypotheses which relate to Part B of the study are stated in the null form.

$$H_0^3 \text{ There is no significant difference at the } .05 \text{ level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program in relation to their reading achievement.}$$

Pre-test and post-test reading scores from the Stanford Achievement Test, Primary I, Form W (see Appendix C), for both the DDR treatment and DDR control groups were analyzed using the univariate analysis of variance. The results of the analysis appear in Table 5. The mean of gains for the treatment group was 21.0, with a standard deviation of gains of 29.9. The mean of gains for the control group was 31.6, with a standard deviation of gains
of 35.3. In each instance the standard deviation of gains is greater than the mean of gains, indicating that the variance within groups is greater than the variance between groups. The F-value of 0.754 did not reach the table value of 4.21 required to claim significance at the .05 level of confidence. Therefore, the hypothesis of no significant difference in reading achievement between DDRs who received a ten-week play-facilitation intervention program and DDRs who did not receive the play-facilitation cannot be rejected.

**TABLE 5**

UNIVARIATE ANALYSIS OF VARIANCE FOR PRE AND POST-TEST GAIN SCORES ON THE STANFORD ACHIEVEMENT TEST, PRIMARY I, FORM W, FOR DDR TREATMENT AND DDR CONTROL GROUP

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1</td>
<td>813.64</td>
<td>813.64</td>
<td>.754*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>27</td>
<td>29135.43</td>
<td>1079.09</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>29949.07</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*not significant
There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program, in relation to their use of spatial representation in drawing.

Pre-test and post-test scores from The Eisner Visual-Verbal Spatial Representation Scale (see Appendix C) for both the DDR treatment and DDR control groups were analyzed using the univariate analysis of variance. The results of the analysis appear in Table 6. The mean of gains for the treatment group was 0.286, with a standard deviation of gains of 2.95. The mean of gains for the control group was 1.33, with a standard deviation of gains of 3.09. In each instance the standard deviation of gains is greater than the mean of gains, indicating that the variance within groups is greater than the variance between groups. The F-value of 0.872 did not reach the table value of 4.21 required to claim significance at the .05 level of confidence. Therefore, the hypothesis of no significant difference in spatial representation in drawing between DDRs who received a play-facilitation intervention program and DDRs who did not receive the play-facilitation cannot be rejected.
TABLE 6

UNIVARIATE ANALYSIS OF VARIANCE FOR PRE AND POST-TEST GAIN SCORES ON THE EISNER VISUAL-VERBAL SPATIAL REPRESENTATION SCALE, FOR DDR TREATMENT AND DDR CONTROL GROUP

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1</td>
<td>7.95</td>
<td>7.95</td>
<td>0.872*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>27</td>
<td>246.07</td>
<td>9.11</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>254.02</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*not significant

$H_0^5$ There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program in relation to their verbalization about their drawing.

Pre-test and post-test scores from the Monroe-Rogers Quality of Ideas Scale (see Appendix C) for both the DDR treatment and the DDR control groups were analyzed using the univariate analysis of variance. The results of the analysis appear in Table 7. The means of gains for the treatment group was 0.64, with a standard deviation of gains of 0.93. The mean of gains for the control group was 0.53, with a standard deviation of gains of 0.92. Although the mean of gains for the treatment group was higher than the mean of gains for the control group, the
value of 0.102 did not reach the table value of 4.21 required to claim significance at the .05 level of confidence. Therefore, the hypothesis of no significant difference in verbalization about their drawings between DDRs who received a play-facilitation intervention program and DDRs who did not receive the play-facilitation cannot be rejected.

**TABLE 7**

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1</td>
<td>.087</td>
<td>.087</td>
<td>.102*</td>
</tr>
<tr>
<td>Within Group</td>
<td>27</td>
<td>23.028</td>
<td>.853</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>23.115</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*not significant

In addition to analyzing the pre-test and post-test scores with univariate analysis of variance for both DDR treatment and control groups with the variables of reading achievement, spatial representation in drawing, and verbalization about drawing treated separately, the data for the DDR treatment and control groups average gains were analyzed over all three variables as a group, using the multivariate analysis of variance. The results
of this analysis appear in Table 8. The $F$ value was calculated at 0.908. The $p$ value was 0.475 which failed to reach the .05 level of significance between the DDR treatment and control group average gain total, and therefore the three major hypotheses in Part B, when treated as a group, could not be rejected.

TABLE 8

MULTIVARIATE ANALYSIS OF VARIANCE TESTS OF SIGNIFICANCE FOR DDR TREATMENT AND DDR CONTROL GROUPS AVERAGE GAIN OVER ALL THREE CATEGORIES OF READING ACHIEVEMENT, SPATIAL REPRESENTATION IN DRAWING, AND VERBALIZATION ABOUT DRAWING

<table>
<thead>
<tr>
<th></th>
<th>Value of $N$</th>
<th>Value of $F$</th>
<th>Value of $P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDR Treatment Group</td>
<td>14</td>
<td>0.908</td>
<td>0.475</td>
</tr>
<tr>
<td>DDR Control Group</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In summary, the univariate analysis of variance showed no significant difference between average gains for DDR treatment and DDR control groups when the three variables of reading achievement, spatial representation in drawing, and verbalization about drawings were analyzed separately. Although the verbal mean of gains for the DDR treatment group which received a ten-week play-facilitation intervention program was higher than the verbal mean of gains for the DDR control group, it was not a
significant gain. Thus, the three major hypotheses of Part B of the study, when analyzed separately, cannot be rejected. In addition, the multivariate analysis of variance showed no significant difference between the average gain total of the DDR treatment and DDR control groups when the combined data were analyzed. Thus, the three major hypotheses of Part B of the study, when analyzed as a group, cannot be rejected.

**Descriptive Report of Analyses of Data**

In this study it has been established by analyses of the data that there is a significant relationship between reading achievement and verbalization as assessed by the *Stanford Achievement Test* and the *Monroe-Rogers Quality of Ideal Scale*, respectively. Also, it has been established that there is no significant relationship between reading achievement and spatial representation in drawing, as assessed by the *Stanford Achievement Test* and *The Eisner Visual-Verbal Spatial Representation Scale*, respectively. In fact, it might be noted that the highest drawing score achieved was nine points, and that this drawing score was received by both a DAR who scored in the 92nd percentile in reading and by a DDR who scored in the 1st percentile in reading. In contrast, a drawing score of one point was received by both a DAR who scored in the 94th percentile in reading and by a DDR who scored in the
1st percentile in reading. From this it can be concluded that if some factor in children's drawings corresponds with reading achievement, it is not spatial relationship as measured by The Eisner Visual-Verbal Spatial Representation Scale. However, spatial representation is not the sole aspect of children's drawings which might relate in some positive manner to reading achievement. Although no art instrument is presently available to measure the relationship between reading achievement and the amount of detail included by a child in his total drawing, the Goodenough Draw-A-Man Test (1926) does positively correlate IQ and the amount of art detail in drawing when dealing solely with the human figure. It may follow that there exists a similar positive relationship between IQ and art detail in total drawing.

While it was beyond the purview of the present study to explore alternative ways of categorizing children's drawings, or to develop scales for such purposes, the positive correlation known to exist between IQ and the Goodenough Draw-A-Man Test prompted the experimenter to examine informally the visual-verbal data (drawings and stories about the drawings) for the purpose of determining any apparent relationship between the amount of detail included in the two types of data. Certain suppositional relationships were noted and are reported below,
accompanied by appropriate examples of children's draw-
ings and stories.

First, it was noted that a child who produced a
picture sparse in detail frequently produced a story
sparse in detail. For example, Figure I shows the sparse
drawing produced by a six-year old boy. It included only
two items, stereotypes of a sun and a house. The accom-
panying story, equally sparse, contained only twelve words:
"I drew a house that I'm livin' in, and the sun outside."
A similar relationship is evident in the work of a six-
year old girl whose drawing is shown in Figure II. Once
again, the drawing included only two items, a woman and
a house; the story consisted of seven words, "A mommie
is goin' in the house."

Second, just as a picture sparse in detail was
usually accompanied by a story sparse in detail, a pic-
ture rich in detail was usually accompanied by a story
rich in detail. The following examples serve to illu-
strate this point. Figure III, the drawing of a six-year
old boy, includes much detail: many clouds, falling snow,
a raised baseline, and a boy standing alone on a mound of
snow. The story told by this child was equally detailed
and contained the 144 words which follow:

It's snowin' and he don't want it to snow, and his
mother said he had to go and buy somethin' at the
store for her, and he don't want to, and then he
went and when he got out there he was cold and he
Figure I. Example of Drawing Sparse in Detail (six-year old boy)
Figure II. Example of Drawing Sparse in Detail (six-year old girl)
Figure III. Example of Drawing Rich in Detail (six-year old boy)
wanted to go back in. Then . . . then he got to the store and he forgot what he was supposed to get. He went back home and he told his mother he forgot and she sended him back and he didn't get it that time either. Then his mother sent his older brother and his older brother forgot too. Then she sended him back again and he didn't get it again. Then the youngest went and he forgot too and she sent him back too, then when he came back he said they were all out of it. That's all.

The drawing of a six-year old girl shown in Figure IV again shows much detail, including railroad tracks, trains, a gas station with curtains on the windows, and a double baseline to indicate depth. Her story, also rich in detail, consisted of the following 156 words:

I did this. I made this story up. It's called LITTLE RED CABOOSE TRUCK, TRUCK TRAIN. And my mom. wait a minute . . . I messed up . . . I made this up in the storybooks, I brung it to school today. the teacher said, 'read it to me.' I let Pam read it and I made this one up. Oh, it was called LITTLE RED CABOOSE TRUCK, TRUCK TRAIN and at the corner he stopped at the little house at the gas station and got some gas. And the name is Jim and Bob, and they was twins and they had the same clothes on and sometimes when they went to the store they didn't have the same clothes on, and then they said, 'Let's go ride in our trains.' They went and they went home and one of his dogs was killed. And then they took him to the doctor and he's all right. And that's the end.

Third, it was noted that while drawings rich in detail frequently were accompanied by stories rich in detail, such drawings did not necessarily receive a high visual score on The Eisner Visual-Verbal Spatial Representation Scale. For example, Figure V shows the detailed drawing of a six-year old girl. While the highest score
Figure IV. Example of Drawing Rich in Detail (six-year old girl)
Figure V. Example of Detailed Drawing: Visual Score (Eisner Scale) of three
recorded for any drawing in the study was nine points on the fourteen category Eisner scale (see Appendix A), this drawing merited only three points. Yet much of the detail in the following 163 word story, for which the child received a verbal score of five points on the five point scale of the Monroe-Rogers Quality of Ideas Scale, also appears in the drawing. It should be noted here that this subject was the only one in the total study to achieve a five point rating on the Monroe-Rogers Quality of Ideas Scale.

This monster, see he's knockin' down the swing. He punched the ball right there, he's gonna knock down the house now, and then he's gonna destroy your world. If the man doesn't save the monster . . . er, doesn't save the people, he's not the goodest man. Then the monster's goodest then, and he'll knock everybody's house down and then he's the winner, and then he'll be the good champion monster of the city. Then he goes to some more houses and then he knocks those down. He goes to some more houses and knocks those down and then he comes to the judge's house and the judge killed him with a army gun. He goes up behind him and struck him with the light and with his powerful gun, and then the monster fell down into the water. And then, and then, the monster's dead so he's the champion--the judge captain. And then that's the end, that's the end. I made this story up.

A similar example of a detailed drawing which received a low rating on the Eisner scale appears in Figure VI. The drawing, also produced by a six-year old girl, rated three points on the visual scale (Eisner). The accompanying 410 word story, which follows, received a verbal (Monroe-Rogers) rating of three points.
Figure VI. Example of Detailed Drawing: Visual Score (Eisner Scale) of three
I'm playing with my dog, and it's sunny. My dog's comin' and I'm playin' in the back yard. It's sunny, and I like it. My mom wants me to go out and play, and my dog came out with me, and I was gonna hook Flip up, that's the dog's name, and I did, and I played with him. I like my dog and I like to play with him in the morning, but I have to get up and go to school. And I like sunny days. Today it's cold and I don't like it when it's cold and I'm gonna go out without my coat in the summer, and I go swimming in the summer, and I want to go now but it's cold. And I don't like it when it's cold. I like it when it's summer. When it's winter I like Christmas, but I like summer. The heater's on, the freezer part is on, and there's some clouds, white and blue clouds, and it's winter. And my mom don't want me goin' out sometimes when it's cold. I don't like it when it's cold. And I go and play with some kids or they come over here and play. When it's a little warm and it's nice, I get out my big balloon rider and sometimes Dickie and Butchie come over and have their bicycles with Amy. And I like it when I have someone to play with. When I don't, I go home or I'll play with my dog or I'll play some records. And when it's winter we have on the radiator, the hot one, some time we have the cold one on, and it's cold. And we have a heater on. And the sun's almost out but it's gonna rain and I'm still out playing with Flip, and I always wanna play with him but sometimes when I wanna play with him he wants to go out while I can't go out. He don't like the rain and when we hook him up he won't go off the porch, but when it ain't rainin', he wants to go out and go play, he goes off the porch. Sometimes he goes out in the back yard when it's muddy and mom won't let him and sometimes when he'll get dirty when it is sunny up front and mom won't let him, he wants to. She'll only, mommy will only let him go out back.

A fourth point noted in the informal examination was the inter-relatedness or inter-mingling of visual and verbal material which seemed to exist in the mind of the child. Illustrative of this point is the case of the six-year old girl who, while telling the story to accompany the picture which she had drawn, at one point seemed to
remember an idea that she hadn't included in the drawing. During this moment, the child told of the incident, but first motioned to the drawing and said, "I never wrote it on here but . . .," which meant that she hadn't included that idea pictorially in her drawing. The story which follows and the drawing which accompanied it (see Figure VII) give the reader an idea of the total context in which this visual-verbal relationship occurred:

Yesterday my aunt -- we wuz havin' a barbeque, and my aunt went to the store and got my cousin a new bike and it was in a great big box, and my uncle and my dad helped get it fixed so he could ride it. And he didn't know what it is and my mom and dad and everybody else acted like they didn't know what it was, but they really knew what it was, and it was his birthday . . . but when it was his birthday, my aunt never got him nothin' cause she never had enough money, and she said, 'Happy Birthday' and he came up and kissed her and he kissed his dad too, and we ate our chicken and we ate our potato salad and we ate our potato chips. And down here's [points on picture] my dad and mom's car. My cousin let my mom ride it [bike], his mom ride it, Becky ride it. him ride it. he let everyoody ride it and my mom fell off of it when she stopped and she screwed her leg all up. And you know what else happened yesterday? I never wrote it on here [points to picture] but somethin' else happened. Yesterday my uncle brought his truck over and I put on my bathing suit 'cause I thought it was hot and then we took a real fun ride through the country in the truck and we got an ice cream, a real fun ride on Central Point and on Brown Road, and every time he stopped he kept on goin' like this [jerks body]. I guess he did it on purpose and everyone fell over like this [falls sideways] and I always fell on mom's sore leg.

To further illustrate the visual-verbal relationship that exists for the child in his drawing and story, it is interesting to note another example. The drawing
Figure VII. Visual portion of an Example Used to Illustrate the Interrelatedness of Visual-Verbal Representation (six-year old girl)
shown in Figure VIII was done in a laborious manner, but was judged to be unclassifiable by The Eisner Visual-Verbal Spatial Representation Scale. In fact, without the story which accompanied the drawing, one could only speculate about the child's intentions. But with the story, for which the child received a score of two points on the Monroe-Rogers Quality of Ideas Scale, the drawing gained considerable meaning. The story, which follows, and the accompanying drawing (Figure VIII) were produced by a six-year old boy:

OK. Now, see when a rocket come out you count and the numbers get bigger and bigger and bigger and bigger and bigger. And the rocket goes up to the moon and lands, and the astronaut mans walk all over. I don't know what they find, found, but I don't know what they find . . . that's it.

Finally, informal examination of the data suggested that the apparent relationship between detail in visual and verbal data is not a function of the play-facilitation intervention program. The pre and post-test drawings shown in the accompanying figures (Figures IX a and b, and X a and b) display a marked increase in the amount of detail included between the early and later drawings. However, the drawings of the first set (Figures IX a and b) are those of a boy in the control group, while the second set of drawings (Figures X a and b) was produced by a boy in the treatment group. Although the degree of detail increased greatly for both boys, only the first
Figure VIII. Visual Portion of an Example Used to Illustrate the Inter-relatedness of Visual-Verbal Representation (six-year old boy)
Figure IXa. Example of Pre-test Drawing by DDR Control Group Subject
Figure IX. Example of Post-test Drawing by the Same DDR Control Group Subject
Figure Xa. Example of Pre-test Drawing by DDR Treatment Group Subject
Figure X\textsuperscript{b}. Example of Post-test Drawing by the Same DDR Treatment Group Subject
boy increased dramatically in score on the Eisner scale (from one to nine points). The score of the second boy, the subject in the treatment group, increased by only two points (from one to three points). The minimal increase on spatial representation score for this subject is apparently not unusual, since the process of drawing appears not to be noticeably affected by intervention programs, according to art educator Dr. W. Lambert Britain, Cornell University (personal correspondence, 1974).

It was interesting to note that for these same two subjects, scores from the Monroe-Rogers Quality of Ideas Scale remained constant, or nearly so, between pre and post-testing. A score of two points was recorded at both times of testing for the boy in the control group; the score of the boy in the treatment group increased from two to three points. However, the score of each of these boys increased greatly on the measure of reading achievement, moving the boy in the control group from the 8th percentile to the 56th percentile and the boy in the treatment group from the 1st percentile to the 38th percentile.

The fact that both boys had increased dramatically in the amount of detail included in their drawings and in their reading achievement scores, while interesting, proved to be inconsequential insofar as the study was concerned. Comparison of increased detail in drawing to
increase in reading achievement for all subjects showed this relationship to be inconsistent.

Thus, this section, section three, pointed out the relationship that exists between the amount of detail in drawing (visual) and the amount of detail in stories about the drawing (verbal). Drawings rich in detail were frequently accompanied by stories rich in detail, just as drawings sparse in detail were frequently accompanied by stories sparse in detail. The amount of detail in drawing seemed not to be positively related to the score on The Eisner Visual-Verbal Spatial Representation Scale. Also, certain examples were cited which point to an interrelationship of visual and verbal expression in the mind of the child. In addition, this section pointed out that, in this study, detail in drawing appeared not to be affected by the play-facilitation intervention program.

Summary

This chapter, chapter four, has presented the results of the analyses of the data and a discussion of the results. Section One tested the two major hypotheses of Part A of the study. From the findings, it appeared that the reading achievement of DARs and DDRs was not significantly related to spatial relationships in drawing, but that reading achievement was significantly related at the .05 level to the child's ability to verbalize
about his drawings. Thus in Part A, the first hypothesis
of no difference in the use of spatial relationships
between the drawings of DARs and DDRs cannot be rejected. The second hypothesis of no difference in verbalizations
about their drawings between DARs and DDRs is rejected.

Section Two tested the three major hypotheses of
Part B of the study. From the findings, it was concluded
that there was no significant difference at the .05 level
between the means of gains of the DDR treatment group
which received a ten-week play-facilitation intervention
program and the means of gains of the DDR control group,
when the three variables of reading, spatial representa-
tion in drawing, and verbalization about drawings were
analyzed separately using univariate analyses of variance
or when analyzed as a group using multivariate analysis
of variance. Although the DDR treatment group did show
a higher mean gain score in verbalization than did the
DDR control group, the gain was not significant at the
.05 level. Thus, none of the three major hypotheses in
Part B of the study could be rejected.

Section Three considered the question of amount
of detail in drawing and how this seemed to relate to
verbalization and reading achievement. Subjects who pro-
duced drawings sparse in detail frequently produced stor-
ies sparse in detail. Similarly, subjects who produced
drawings rich in detail frequently produced stories rich
in detail. But, those subjects who made gains in amount of detail included in their drawings over a ten-week period did not consistently show an increase in reading achievement. While The Eisner Visual-Verbal Spatial Representation Scale measures spatial representation in drawing, scores of subjects on this scale seem not to reflect well their inclusion of detail in drawing. Finally, play-facilitation intervention does not appear to be associated with an increase of detail in drawing.

In conclusion, of the five major hypotheses of this study stated in the null form, only the second hypothesis of no difference in verbalizations about their drawings between DARs and DDRs is rejected. The other four major hypotheses of this study cannot be rejected.

Chapter five will present the summary and conclusions of this study, questions posed by this study, and the implications for further research.
CHAPTER FIVE

SUMMARY AND CONCLUSIONS

This chapter, chapter five, contains two basic sections: first, summary and conclusions of the study; and second, questions and implications for further research which seem to emanate from the study.

Summary

This study was divided into two sections, Part A and Part B. The purpose of Part A of the study was to explore the relationship that exists between developmentally advanced readers (DARs) and developmentally delayed readers (DDRs) in regard to their use of pictorial space in drawing and their verbalization about their drawing. The purpose of Part B of the study was to explore the effect of a ten-week play-facilitation intervention program for DDRs only upon the variables of reading achievement, use of pictorial space in drawing, and verbalization about drawing. In Part B of the study, the subjects were divided into two groups--the DDR treatment group which received the ten-week play-facilitation intervention program, and the DDR control group which did not receive the play-facilitation intervention program.
The two main questions for investigation were:

1. Do DARs and DDRs (advanced and delayed readers of average IQ) differ in their use of space in drawing and in their level of verbalization about their drawing?

2. Does a ten-week play-facilitation intervention program for DDRs have an effect upon their reading achievement, their use of pictorial space in drawing, and their quality of verbalization about drawing?

The following hypotheses were tested in this study:

$H_o^1$ There is no significant difference at the .05 level between advanced and delayed readers of average intelligence in their use of spatial relationships in their drawing.

$H_o^2$ There is no significant difference at the .05 level between advanced and delayed readers of average intelligence in their verbalizations about their drawing.

$H_o^3$ There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program in relation to their reading achievement.
There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program, in relation to their use of spatial representation in drawing.

There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program in relation to their verbalization about their drawing.

The first two hypotheses were tested in Part A and the final three hypotheses were tested in Part B of the study. The following procedures were employed for testing of the major hypotheses.

Procedure for Part A

1. Identification was made of four first grade classrooms from which the subjects to be used in the study would be selected.

2. The reading section of the Stanford Achievement Test, Primary I, Form W, was administered to all pupils in the four first-grade classrooms.
3. The Otis-Lennon Mental Ability Test was administered to all pupils who scored at or above the 80th percentile and at or below the 20th percentile in reading. Pupils who scored within the 87-115 IQ range and who had scored at or above the 80th percentile in reading were identified as developmentally advanced readers (DARs). Pupils who scored within the 87-115 IQ range and who had scored at or below the 20th percentile in reading were identified as developmentally delayed readers (DDRs). These two groups, DARs and DDRs, were eligible for participation in the study.

4. The thirty-one subjects selected for Part A completed individually administered drawing and verbal tasks, which were evaluated by The Eisner Visual-Verbal Spatial Representation Scale and the Monroe-Rogers Quality of Ideas Scale, respectively.

Procedure for Part B

1. Thirty DDR subjects were randomly assigned to experimental and control conditions within a randomized pre-test/post-test control group design model. The experimental group received the play-facilitation intervention program
while the control group did not receive the play-facilitation intervention program. The selection of subjects for the DDR treatment and DDR control groups was made in such manner that the two groups were matched as equally as possible according to the variables of IQ, reading achievement, sex, and school environment.

2. University students who were enrolled in a child development course were selected and trained to serve as play facilitators.

3. Play facilitators conducted a ten-week play-facilitation intervention program for the treatment group. Each subject in the treatment group met on an individual basis with one of the play facilitators for one-half hour period, twice per week.

4. Both the DDR treatment and DDR control groups were post-tested using as measures the reading section of the Stanford Achievement Test, Primary I, Form W, and the drawing and verbal tasks, which were evaluated by The Eisner Visual-Verbal Spatial Representation Scale and the Monroe-Rogers Quality of Ideas Scale, respectively.
The data from Part A were analyzed using the t-test. The data from Part B were analyzed using the univariate analysis of variance and the multivariate analysis of variance.

Conclusions

The following is a re-statement of the hypotheses and below each hypothesis is a summary of the findings for the respective hypothesis:

\[ H_0^1 \] There is no significant difference at the .05 level between advanced and delayed readers of average intelligence in their use of spatial relationships in their drawing.

The drawings of the two groups of subjects, DARs and DDRs, were compared according to the scores obtained on The Eisner Visual-Verbal Spatial Representation Scale. The group comparison did not achieve significance at the .05 level. Therefore, the hypothesis cannot be rejected.

\[ H_0^2 \] There is no significant difference at the .05 level between advanced and delayed readers of average intelligence in their verbalizations about their drawings.
The verbalizations about the drawings of DARs and DDRs were compared according to the scores obtained on the Monroe-Rogers Quality of Ideas Scale. The group comparison proved to be significant at the .05 level in favor of the DARs. Developmentally advanced readers (DARs) achieved a higher level of verbalization about their drawing than did developmentally delayed readers (DDRs). In view of these findings, the hypothesis of no difference is rejected.

\[ H_0^3 \quad \text{There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program in relation to their reading achievement.} \]

The gain scores of the DDR treatment group and the gain scores of the DDR control group were compared by a univariate analysis of the pre-test/post-test scores obtained on the Stanford Achievement Test. The mean gains score comparison between the two groups on the variable
of reading did not achieve significance at the .05 level. Therefore, the hypothesis cannot be rejected.

\[ H_0^4 \] There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program in relation to their use of spatial representation in drawing.

The gain scores of the DDR treatment group and the gain scores of the DDR control group were compared by a univariate analysis of the pre-test/post-test scores obtained on The Eisner Visual-Verbal Spatial Representation Scale. The mean gains score comparison between the two groups on the variable of spatial representation in drawing did not achieve significance at the .05 level. Therefore, the hypothesis cannot be rejected.

\[ H_0^5 \] There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilita-
tion intervention program in relation to their verbalization about their drawing.

The gain scores of the DDR treatment group and the gain scores of the DDR control group were compared by a univariate analysis of the pre-test/post-test scores obtained on the *Monroe-Rogers Quality of Ideas Scale*. Although the mean of gains for the treatment group was higher than the mean of gains for the control group, the analysis was not significant at the .05 level. Therefore, the hypothesis cannot be rejected.

Hypotheses 3, 4 and 5 were considered together because of their similarity. These hypotheses were all subjected to a multivariate analysis of variance to measure the effects of a play-facilitation intervention program upon the three variables of reading achievement, spatial representation in drawing, and verbalization about the drawings of the DDR treatment and DDR control group.

In considering the three hypotheses simultaneously, the average gain over all three variables of reading achievement, spatial representation in drawing, and verbalization about the drawing of the DDR treatment and DDR control groups, was not significant at the .05 level.
Therefore, the three major hypotheses in Part B of the study which claim no difference between the DDR treatment and DDR control groups cannot be rejected.

In the descriptive analyses of the data, several factors were noted:

1. A positive relationship frequently existed between drawings sparse in detail (visual) and stories sparse in detail (verbal).

2. Similarly, a positive relationship frequently existed between drawings rich in detail (visual) and stories rich in detail (verbal).

3. While stories rich in detail frequently accompanied drawings rich in detail, such drawings did not necessarily receive a high visual score on The Eisner Visual-Verbal Spatial Representation Scale, which is a measure to evaluate spatial representation in drawing, *id est*, drawings rich in detail were not consistently found to be rated highly in the use of spatial representation.

4. An inter-relatedness between visual and verbal material appeared to exist in the mind of the child, as evidenced by the stories which accompanied the drawings (reported in chapter four). For example, in one instance the child, when
relating her story, first pointed to the drawing (Figure X) and said, "I never wrote it on here but . . .," and then related the incident.

5. In Part B of the study, provision of a play-facilitation intervention program for DDRs seemed not to affect the amount of detail included in the drawings of these subjects. That is, play-facilitation intervention did not appear to be associated with an increase in drawing detail.

In summary, the statistical analyses of the two major hypotheses in Part A of the study indicated that the first hypothesis of no significant difference between DARs and DDRs in their use of spatial representation in drawing cannot be rejected. However, the second hypothesis of no significant difference between DARs and DDRs in their verbalizations about their drawing is rejected. This study has demonstrated that the verbal level of DARs is significantly better, at the .05 level of confidence, in terms of the quality of ideas expressed in the stories which accompany their drawings, than the verbalizations of DDRs. In Part B of the study, which consisted of a DDR treatment group which received a ten-week play-facilitation intervention program and a DDR control group, the three major hypotheses of no difference between the two groups
on the variables of reading achievement, spatial representation in drawing, and level of verbalization about their drawing cannot be rejected.

In addition to the statistical analyses of the data summarized above, the descriptive analyses of the data showed a frequent relationship between the visual-verbal aspect of drawing, since drawings sparse in detail (visual) were frequently accompanied by stories sparse in detail (verbal). Similarly, drawings rich in detail (visual) were frequently accompanied by stories rich in detail (verbal). Finally, a ten-week play-facilitation intervention program for DDRs did not appear to be associated with an increase in the amount of detail which these subjects include in their drawings or in the stories which they tell about their drawings.

Thus, major findings of this study supported the claims of earlier researchers and theorists that positive relationships exist among children's cognition and their symbolic expression (both visual and verbal), but only to the degree that the quality of ideas in stories which children told about their drawings related in a positive manner to their reading achievement. Also, informal comparison of subjects' drawings and stories revealed an apparently positive relationship between the amount of detail included in visual and verbal expression. The
study failed to support the supposed positive effect of the provision of an opportunity to engage in symbolic play upon the level of other types of symbolic expression.

Although many factors, singly or in combination, may have contributed to the lack of significant differences found in four of the five major hypotheses of the study, the effect of several identifiable factors seemed to be crucial. First, the number of subjects identifiable as DARs limited severely both the amount and quality of the data available for analysis in Part A of the study. A larger pool of subjects from which DARs could have been selected would have enabled the experimenter to establish for study a more homogeneous group, distinctly different from the contrasting group of DDRs. Second, the instrumentation available constricted the parameters of the study. Only one drawing factor (spatial representation) and one verbal factor (quality of ideas) could be assessed and analyzed. While there may be many other factors, such as visual and verbal detail, instruments for their assessment are yet to be produced. Also, the measure of reading achievement proved to be capable of generating only unstable data for first grade children. Until better instruments and more reliable procedures for assessing young children's achievement and growth in reading are available, progress in determining the real relationship
between the area of cognition and other types of symbolic expression will be deterred.

Questions and Implications for Further Research

As a result of this study, certain questions are posed and certain implications for further research are evident.

1. The number of DAR subjects used in Part A of the study is minimal. Would conducting the same study, using a larger sample within a 90-110 IQ range, produce similar findings?

2. If IQ is positively related to reading achievement, and if the amount of detail in drawing (Goodenough Draw-A-Man Test) is positively related to IQ, is it possible to formulate an art evaluation measure that would equate detail in total drawing with the ability to deal with the printed symbol necessary for success with reading?

3. If, as shown in this study, some factors of verbalization about drawing are related to cognition (reading), what specific factors in the drawing are related to cognition?

4. Lowenfeld has stated that an art technique cannot be explained or taught since each child must develop his own technique. He further stated that what can be
explained is a procedure (Lowenfeld, 1964, p. 35).
If only art procedure can be explained, do children who have formal art classes perform better in cognitive areas than children who do not have this instruction?

5. Would an art-facilitation intervention program, with an emphasis upon awareness of detail, produce findings similar to those in this study?

6. If provision of the opportunity to engage in symbolic play has a positive effect upon child growth and development in the cognitive areas, as shown in some of the literature, can the specific factors in a play-facilitation intervention program which cause this salutary effect be identified?

7. Would a play-facilitation intervention program of longer duration produce findings similar to those obtained in this study?

8. Would a structured play-facilitation intervention program, an unstructured play-facilitation intervention program, and a control group which received no play period, produce findings similar to those obtained in this study?

9. Would low reading achievers of high IQ profit more from a play-facilitation intervention program than
low reading achievers of low IQ?

10. Does a play-facilitation intervention program affect children's drawings, or is it only a developmental phenomenon that can bring about such change in drawing? Because of the limitations of this study, this question is moot.

11. Would the practice of collecting one drawing per week from each subject in both the treatment and control group during the play-facilitation intervention program, for the purpose of attaining an average score, be a more equitable means of evaluating spatial relationship as measured by the Eisner scale?

12. Preliminary findings from a study which emanated from this research study indicate that some children produce a different type of drawing when given the option to draw something and tell a story about it, than when the story which they told to describe their drawing was later read to them. Is this difference in visual representation a function of language, of development, or of some as yet unknown factor or inter-relationship of factors?

13. Would classroom teacher judgment be a more effective procedure for selecting DAR and DDR candidates? And if classroom teacher judgment were the criteria for
selecting DARs and DDRs, would conducting Part A and Part B of this study produce similar findings?
APPENDIX A

INSTRUMENTS

135
STANFORD ACHIEVEMENT TEST

Primary I, Form W

by

Truman L. Kelley, Richard Madden, Eric F. Gardner, & Herbert C. Rudman

Copyright 1966

Permission was granted by the publishers, Harcourt Brace Jovanovich, Inc., to use this instrument for the study.

It is the standard policy of the publisher not to allow their instruments to be used in documents which are often filed in areas open to the general public, and for this reason permission was not granted to include a copy of the instrument itself in the Appendix of the dissertation.
OTIS-LENNON MENTAL ABILITY TEST

Elementary I Level, Form J

by

Arthur S. Otis and Roger T. Lennon

Copyright 1967

Permission was granted by the publishers, Harcourt Brace Jovanovich, Inc., to use this instrument for the study.

It is the standard policy of the publisher not to allow their instruments to be used in documents which are often filed in areas open to the general public, and for this reason permission was not granted to include a copy of the instrument itself in the Appendix of the dissertation.
The Elsner Visual-Verbal Spatial Representation Scale

One of the major objectives of the Elsner study entitled "A Comparison of the Developmental Drawing Characteristics of Culturally Advantaged and Culturally Disadvantaged Children," (1967) was to construct a visual-verbal drawing scale useful for assessing levels of development in children's drawing. Another major objective was to determine the relationship between perception as manifested in drawing and language as assessed by a test of reading vocabulary.

Below are listed each of the fourteen categories of the Elsner Scale:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No horizon line present. Morphemes &quot;floating&quot;, not standing on the edge of the paper.</td>
</tr>
<tr>
<td>2</td>
<td>Morphemes standing on the bottom edge of the paper. No horizon line drawn.</td>
</tr>
<tr>
<td>3</td>
<td>Some morphemes standing on the bottom-edge of the paper, others floating in space.</td>
</tr>
<tr>
<td>4</td>
<td>Morphemes standing on bottom edge of paper and horizon line drawn.</td>
</tr>
<tr>
<td>5</td>
<td>Initial horizon line drawn.</td>
</tr>
<tr>
<td>6</td>
<td>Two or more horizon lines drawn.</td>
</tr>
<tr>
<td>7</td>
<td>Horizon line drawn. Morphemes floating above horizon line.</td>
</tr>
<tr>
<td>8</td>
<td>Horizon line drawn. Morphemes standing on horizon line.</td>
</tr>
<tr>
<td>9</td>
<td>Horizon line drawn. Some morphemes standing on horizon line, other morphemes floating above horizon line.</td>
</tr>
<tr>
<td>10</td>
<td>Morphemes overlap round but do not overlap horizon line.</td>
</tr>
<tr>
<td>11</td>
<td>Morphemes standing on bottom edge of paper and overlapping horizon line.</td>
</tr>
<tr>
<td>12</td>
<td>Horizon line drawn. Morphemes clearly overlapping horizon line.</td>
</tr>
<tr>
<td>13</td>
<td>Horizon line drawn. Morphemes overlapping each other.</td>
</tr>
<tr>
<td>14</td>
<td>Unclassifiable.</td>
</tr>
</tbody>
</table>

Visual Examples of Each Category

THE HIGHER VISUAL-VERBAL SPATIAL REPRESENTATION SCALE
Level One - Ideas fully concrete. Concerned with the immediate environment. Objects and events seen as separate items. Not concerned with relationships.

Level Two - Sees some objects and events in relation to each other. Relationships seen are concerned with the concrete and the here and now. Characters are related to their actions.

Level Three - Sees relationships between objects and events, including relationships of size, shape, color, use, distance and cause and effect. Begins to include in his ideas some people, things, or events farther away in time or space. Recognizes simple emotional reactions and motives of characters. Forms sensory images (visual, auditory, thermal, tactile, kinesthetic).

Level Four - Sees relationships of various kinds as Level Three, but tends to include more abstract qualities as well as the concrete and immediate. Anticipates events, deduces more complex cause-and-effect relationships and time relationships. Recognizes simple character traits.

Level Five - Ideas at Level Four, but with the addition of core evaluation and judgment. Generalizes within the limits of his experience. Makes judgments which include the consideration of abstract concepts.

APPENDIX B

PART A OF THE STUDY
DAR AND DDR SUBJECTS SELECTED ON THE BASIS OF IQ, AS MEASURED BY THE OTIS-LENNON TEST OF MENTAL ABILITY, AND READING ACHIEVEMENT, AS MEASURED BY THE STANFORD ACHIEVEMENT TEST, PRIMARY I, FORM W

<table>
<thead>
<tr>
<th>Developmentally Advanced Readers (DARs)</th>
<th>IQ</th>
<th>Reading Percentile</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>87</td>
<td>80</td>
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<tr>
<td>2</td>
<td>94</td>
<td>100</td>
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<td>3</td>
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<td>94</td>
</tr>
<tr>
<td>10</td>
<td>113</td>
<td>86</td>
</tr>
</tbody>
</table>

n=10  M=100.4  M=89.2

<table>
<thead>
<tr>
<th>Developmentally Delayed Readers (DDRs)</th>
<th>IQ</th>
<th>Reading Percentile</th>
</tr>
</thead>
<tbody>
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<td>1</td>
</tr>
<tr>
<td>2</td>
<td>91</td>
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SCORES FROM THE MONROE-ROGERS QUALITY OF IDEAS SCALE FOR DEVELOPMENTALLY ADVANCED READERS (DARs) AND DEVELOPMENTALLY DELAYED READERS (DDRs)

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<td>t-test</td>
</tr>
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<td>$H_0^2$ There is no significant difference at the .05 level between advanced and delayed readers of average intelligence in their verbalizations about their drawings.</td>
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<td>$H_0^3$ There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program, in relation to their reading achievement.</td>
<td>Multivariate Analysis of Variance, Univariate Analysis of Variance</td>
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<td>$H_0^4$ There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program, in relation to their use of spatial representation in drawing.</td>
<td>Multivariate Analysis of Variance, Univariate Analysis of Variance</td>
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<td>$H_0^5$ There is no significant difference at the .05 level between delayed readers who receive a play-facilitation intervention program and delayed readers who receive no play-facilitation intervention program, in relation to their verbalization about their drawing.</td>
<td>Multivariate Analysis of Variance, Univariate Analysis of Variance</td>
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APPENDIX C

PART B OF THE STUDY
PRE-TEST/POST-TEST READING PERCENTILE SCORES FROM THE STANFORD ACHIEVEMENT TEST, PRIMARY I, FORM W, FOR DDR TREATMENT AND DDR CONTROL GROUPS

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**PRE-TEST/POST-TEST VERBAL SCORES FROM THE MONROE-ROGERS QUALITY OF IDEAS SCALE, FOR DDR TREATMENT AND DDR CONTROL GROUPS**

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DEVELOPMENTALLY DELAYED READERS (DDRs) RANDOMLY ASSIGNED TO EXPERIMENTAL AND CONTROL CONDITIONS WITHIN A RANDOMIZED PRE-TEST/POST-TEST CONTROL GROUP DESIGN MODEL, USING VARIABLES OF IQ, READING ACHIEVEMENT, SEX AND SCHOOL ENVIRONMENT

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M=100.6 M=2.4 7 7 9 5

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BIBLIOGRAPHY


