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THE EFFECT OF VARIATION IN THE AMOUNT
OF PLAY MATERIALS ON THE PLAY
BEHAVIOR OF THE PRESCHOOL
CHILD

by
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APPROVAL SHEET

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ABSTRACT

Title of Dissertation: The Effects of Variation in the Amount
of Play Materials on the Play Behavior
of the Preschool Child

Ann E. Rechsteiner, Doctor of Philosophy, 1978

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Major questions have arisen concerning the function of play in the development of the young child. Changing attitudes towards the significance of play reflect changing social patterns. The present study was concerned with the effect that a removal of a specified amount of play material had on the play behavior of young children.

Ten intact groups of children from the Washington, D.C. Metropolitan Area ranging in age from three to five years old were studied by this researcher.

A time sampling technique using a modified version of DUSOPAC was used to measure the play behavior of the groups. The data collected by the observers were compiled and analysed using a one way ANOVA for a repeated measure design for each of the eleven variables (Disruptive, Unoccupied, Solitary, On-looker, Parallel, Associative, Cooperative, Not Play, Child-Child, Child-Adult, Child-Self.)

The findings indicated that a significant relationship (at the .05 significance level) existed between the amount of social play observed and the amount of play equipment that was available to the young child. Less social play was observed when the material was removed on the first treatment day than when the material was present. No significant relationships were observed between the amount of equipment available and the amount of non-social play, the amount of child-child interaction, the amount of child-self interaction, or the amount of child-adult interaction that occurred.

Investigation of the mean score values revealed trends for both interaction patterns and play behavior. Females were found to display more child-self interaction behavior and males more child-child interaction behavior. Also, for all days of observation, regardless of treatment, the most frequently occurring interaction behavior was child-child followed by child-self. The least frequently occurring interaction behavior was child-adult. For play behavior for all days of observation, regardless of treatment, males displayed more disruptive, unoccupied, associative, cooperative, parallel and social play behavior than did females. Females were found to display more solitary, onlooker, not-play and non-social play behavior than were males. These findings were not in agreement with Langlois, Gottfried and Seay (1973), and Sitzky, Haywood and Isett (1970).

The results of this study seem to indicate that there is a need for more research to 1) update earlier studies; 2) study the role of play in the development of social interactions;

3) investigate saturation levels of equipment as they relate to a child's play; 4) to explore in more detail environmental influences on play behavior.

DEDICATION

This dissertation is dedicated to my parents, Mr. and Mrs. Charles Rechsteiner, and to my husband, Stephen, whose love and support made this possible.

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TABLE OF CONTENTS

	Page
DEDICATION	ii
ACKNOWLEDGMENTS	iii
LIST OF TABLES	viii
Chapter	
1. INTRODUCTION	1
PURPOSE	2
QUESTIONS TO BE ANSWERED	2
ASSUMPTIONS	3
SIGNIFICANCE OF THE STUDY	3
DEFINITION OF TERMS	5
PLAN OF THE STUDY	6
2. REVIEW OF RELATED LITERATURE	7
SECTION I: DEFINITIONS, THEORIES AND CATEGORIES OF PLAY	7
Definitions	7
Theories	10
Categories of Play Behavior	27
SECTION II: PLAY BEHAVIOR AND THE YOUNG CHILD	33
SECTION III: THE IMPORTANCE OF PLAY IN EARLY CHILDHOOD EDUCATION	39
SECTION IV: PLAY BEHAVIOR AND SOCIAL INTERACTION	49
SUMMARY	54

Chapter

3. METHODS	55
SUBJECTS	55
COLLECTION OF THE DATA	59
INSTRUMENTATION	64
RELIABILITY	66
VALIDITY	72
4. RESULTS	76
ANALYSIS OF THE DATA	76
QUESTIONS OF THE STUDY	76
Question 1	80
Question 2	80
Question 3	83
Question 4	89
5. SUMMARY, DISCUSSION AND RECOMMENDATIONS	98
SUMMARY OF THE FINDINGS	98
DISCUSSION	100
RECOMMENDATIONS FOR EDUCATION	104
SUGGESTIONS FOR FURTHER RESEARCH	105

APPENDIXES

A. PERMISSION LETTERS--SCHOOLS	106
B. OBSERVER'S PACKET	111
C. SCRIPT OF THE TIME-SEQUENCED TAPE	125
D. PERMISSION LETTER--INSTRUMENT	128
E. OBSERVATION SHEET	131

F. TEACHER RATING SHEET	135
G. MATERIAL LISTS	137
H. OBSERVER COMMENTS	154
I. TEACHER COMMENTS	156
BIBLIOGRAPHY	163

LIST OF TABLES

Table	Page
1. Sex Distribution per Day for Each Class	57
2. Adult-Child Composition per Day for Each Class	58
3. Average Amount of Prior Group Experience for Group as a Whole	60
4. Time of Observation and Number of Observers . . .	63
5. Interrater Reliability	67
6. Mean Values for Validity as Measured by the Teachers	75
7. Summary of Analysis of Variance for Interaction Behavior	77
8. Mean Scores for Types of Interaction	78
9. Standard Deviation for Mean Scores for Types of Interaction	79
10. T Scores: Male and Female Interaction Behavior	82
11. Summary of Analysis of Variance for Non-Social Behavior	84
12. T Scores: Male and Female Non-Social Behavior	85
13. Mean Scores for Non-Social Behavior	86
14. Standard Deviation for Mean Scores for Non-Social Behavior	87
15. Summary of Analysis of Variance for Social Behavior	90
16. Newman-Keuls Test of Ordered Means	91
17. T Scores: Male and Female Social Behavior	93

Table	Page
18. Means Scores for Social Behavior	94
19. Standard Deviations for Mean Scores for Social Behavior	95
20. Values for the Variable Not-Play	97

Chapter 1

INTRODUCTION

Play is the way a child learns what no one can teach him. Play is the most typical activity of a child, yet it is unique, individual and ephemeral (Feitelson and Ross, 1973; Frank, 1968).

Throughout the literature available on play, one finds a great variation in the analysis and estimation of the function it serves in the life of a child. Much has been theorized about the importance of play as a socializer of a young child; as a contributor to the mental health of a young child; as a way of accumulating information for a young child, and much has been theorized about the role it plays in the cognitive development of a young child, and about the role it plays in developing attitudinal styles in a young child.

When one explores the theories of play, one finds them to be classified according to what elements or aspects of play are emphasized: biological, psychological, sociological and clinical (Slobin, 1964; Britt and Janus, 1941, Scarfe, 1962). No matter how the play behavior is classified, however, it is a mirror of an individual's developmental pattern, and is as complex as the human being himself.

Necessary conditions for the emergence of play behavior

include such things as availability of space, availability of materials and a supportive environment. A child needs concrete experiences, access to many kinds of materials, and freedom to explore materials, in order for play to occur (Hartley, 1971; Feitelson and Ross, 1973; Johnson, 1935).

Clearly, play is vital to all of humanity. It is the basis for most of the happiness of mankind, and the means by which humanity advances creatively, scientifically, intellectually and socially (Scarfe, 1962). The influence of the teacher, peers, and the materials available on the play of a child affects the way that child responds to his world.

PURPOSE

The purpose of this study is to examine the effect that the removal of a specified amount of play material has on the play behavior of young children. While the general purpose is similar to Johnson's study, "The Effect on Behavior of Variation in the Amount of Play Equipment," the present study is not a replication of that study (Johnson, 1935). The problem stated by the earlier research, however, was considered significant and worthy of further study.

QUESTIONS TO BE ANSWERED

1. Is there a relationship between the amount of available play material and the amount of child-child interaction?
2. Is there a relationship between the amount of available play material and the amount of child-adult interaction?

3. Is there a relationship between the amount of available play material and the amount of non-social play behavior?
4. Is there a relationship between the amount of available play material and the amount of social play behavior?

ASSUMPTIONS

1. All children participate in some form of play.
2. All children exhibit social and non-social behavior.
3. Play behavior can be adequately measured by the instrument chosen for this study.
4. Social and non-social play behavior are definable according to Parten's categories.
5. The nature of play materials affects the play behavior of children.
6. Children interact with their environment during play.

SIGNIFICANCE OF THE STUDY

Previous studies of Nursery Schools identify active, vigorous, intense and rapidly paced play as a major component of preschool behavior. Recently, major questions have arisen concerning the function of play in individual, cognitive, physical or psychosocial development. The changing attitudes toward the functional significance of play are due in part to the emphasis since 1960 on the cognitive character of education (Sutton-Smith, 1967).

Although various investigators have observed that play makes an appearance during the preschool years, very little

experimental data have been collected. The role of play in education and society has been recognized in theory while greatly neglected in practice. Most of the behavior data that have been collected have dealt with play content rather than play structure or function (Iwanaga, 1972; Sutton-Smith, 1967; Shallit, 1932; Bettelheim, 1972). Also, the operational definition of play has varied from study to study, thus making it difficult to relate the experimental data (Schlosberg, 1947; Weisler and McCall, 1976).

Many of the research studies upon which much practice in Early Childhood Education is based were done during the years 1920-1930. Such studies include those of Parten (1932), Hurlock (1934), and Johnson (1935). Since that time, there have been many changes in society. Families of the present-day society are more affluent, and their children are, therefore, exposed to a greater variety and amount of elaborate toys and play materials, many of which are more conducive to solitary play than those of forty years ago. The amount of time in which the children of today are involved with mass media affects both the amount of and the types of play behavior exhibited by a child. Mobility patterns of families affect the amount of the types of play materials available to the child. Young children today receive more parental reinforcement for playing by themselves than for playing with others. Family size has decreased, resulting in a reduction in the number of sibling relationships available to a young child, thereby influencing the nature of the young child's play behavior (Barnes, 1971).

Separation of the world of children from the world of adults is a recent development; often both parents are working and their jobs are located away from home, and a child is not able to model in play his parent's actions. In addition to these changes in society, the statistical approaches that are used at the present time to analyze the data are different from those of the past. All these changes make it necessary for replications of early research to be done, to see if, and how, the earlier research is applicable to our present society (Weisler and McCall, 1976).

DEFINITION OF TERMS

Adult-Child Interaction: verbal and non-verbal communication between an adult and a child.

Child-Child Interaction: verbal and non-verbal communication between two children.

Experimental Play Materials: play materials withdrawn from the classroom (Johnson, 1935).

Non-Social Play Behavior: play behavior defined according to Parten's categories of "unoccupied", "solitary" and "onlooker" and the category established by Barnes, et.al., of "disruptive" play behavior (Barnes, Wootton and Wood, 1972).

Play: Play is a child's response to life....it is his life (Hartley and Goldenson, 1963).

Play Behavior: behavior of a child while playing in an indoor classroom.

Play Material: any material or equipment that is available in the classroom and may be used in play.

Social Interaction: those behaviors which are directed toward oneself, toward another or others (adults or peers). These behaviors may involve either initiations or responses (Murphy and Goldner, 1976).

Social Play Behavior: play behavior defined according to Parten's categories of "parallel," "associative," and "cooperative" play behaviors (Barnes, Wootton, and Wood, 1972).

PLAN OF THE STUDY

This study is described in five chapters. Chapter I serves as an introduction which includes the purpose, research questions, assumptions, significance of the study, definition of terms and the plan of the study. Chapter II is the review of literature. The methods used to analyze the data are included in Chapter III. In Chapter IV the results of the study are presented. Chapter V contains the summary, discussion and recommendations.

Chapter 2

REVIEW OF RELATED LITERATURE

The review of related literature which follows is divided into five sections. Section I is devoted to the definitions, theories and categories (or patterns) of play behavior. Section II is devoted to play behavior and the young child. Section III is devoted to the importance of play in Early Childhood curricula. Section IV is devoted to the relationship between play behavior and social interaction.

SECTION I: DEFINITIONS, THEORIES AND CATEGORIES OF PLAY

Definitions

In reviewing the literature, the researcher found varied definitions for the words, "play" and "play behavior." Historically, the definitions of play have reflected the ongoing changing attitudes toward play (Sutton-Smith, 1967).

Leyden, in 1971, investigated advice given to parents about preschool play through popular magazines. During the first two decades of this century, there were twice as many articles written about play as during the most recent two decades. During the 1930's, the orientation toward play was educational; during the 1940's the orientation was medical and during the 1950's and 1960's, the orientation was psychological (Leyden, 1971).

Play has been defined as an inherent right of children (Almy, 1967). Some researchers feel it to be a voluntary activity, that a child plays by choice, and that the activities in play are somewhat tentative and uncommitted and are still capable of exploration, revision, renunciation, and replacement (Scarfe, 1962). Play has been referred to as those activities of a young child that have no rules other than those he himself imposes, and that have no intended end result in external reality (Bettelheim, 1972). Others feel that a child's play is more than mere activity or occupation which fills time. Play is the mirror of an individual's developmental pattern (Davis, 1965).

Play has also been described as a spontaneous or organized recreational activity of children. It is pleasurable and absorbing and is considered the crux of the preschool experience. Play is serious business and the opportunity to play freely is vital to healthy development of males and females. Play is necessary for children to function properly and lies at the heart of the nursery school experience.

Other authors have described play as an incomplete or otherwise useless behavior, while still others have extended this idea, and have elaborated on the difference between the idea of "leisure time" and "time for leisure." They feel that "leisure" generally taken means aimless activity, or a free, unoccupied time during which a person may indulge in rest and recreation. "Time for leisure" is time and used for self-renewal, self-extension and self-fulfillment (Martinello, 1973; Schlosberg, 1947).

Educationally, play is the only activity in which the whole educative process is fully consummated, such that experience induces learning and learning produces wisdom and character. In play, a child is learning to learn. Play is a learning activity, a way of exploring and experimenting while a child builds relationships with the world and with himself. Play reflects perceptual and intellectual activities that are engaged in for their own sake. It is ordered, communal and limited in time and space (Martinello, 1973; Scarfe, 1962; Birnie and Whiteley, 1973). In all, it represents a complete educational process of the mind.

Play is also a child's language of expression and communication. Dearden suggests that play has many dimensions. It can be "playing at," "playing with," and "playing in," all of which will affect the definition of play (Martinello, 1973; Bettelheim, 1972). Other dimensions of play constitute behavior and behavioral sequences that are organism-dominated rather than stimulus-dominated. Play consists of relatively fragmented sequences whose elements have been preestablished in the individual response repertory (Klinger, 1969; Weisler and McCall, 1976).

No matter what the definition of play, one must remember that play is a delicate state which must be actively sustained. Play is the magical state of childhood in which children revel and one which adults envy. Play refers to the activities of the young child that have no rules except those that are self-imposed and that have no intended end result in external reality. In play a child's fantasy dictates what will happen

next. Play begins at the level of fantasy at which a child embarks on playing out fantasy as opposed to merely being involved in fantasy. By playing out fantasy a child subjects fantasy to the test of reality. A child needs to learn the limits that reality imposes on the realization of those fantasies involving others as well as himself. Play also serves as a means of reducing tension and anxiety. Children restore a sense of mastery and control over different situations in the process of recreating them in fantasy and play (Davis, 1965; Bettelheim, 1972; Weisler and McCall, 1976). And finally, the importance of play is reflected in Shaw's definition of an educational utopia: a place where work was play and play was life (Scarfe, 1962).

Theories

Theories of play may be classified according to the elements or aspects of play emphasized, viz., biological, psychological, sociological, clinical and less specific classifications. The biological explanation tells us that human children do, in fact, play. One of the first approaches that tells us why children play as opposed to doing nothing or doing other things is Spencer's and Schiller's theory of "surplus energy." In 1875, Schiller described play as the aimless expenditure of exuberent energy. Some young creatures had more energy than they needed either for physical or psychological growth. Energy was considered surplus if it was expended in

play and non-surplus if it was expended in work (Britt and Janus, 1941).

Spencer argued that animals high on the evolutionary continuum did not spend all of their time and energy in getting food, and had, therefore, to use up "surplus energy" in other activities. Spencer believed that play channelled the discharged overflow of energy into simple imitative activity. Children had no need to concern themselves with serious aspects of adult life. Since a child was freed from these concerns by parental care, the child had energy to spare. This energy came from the same source as the energy that drives the body. This energy had to be used and it was expended in play (Scarfe, 1962).

A combination of both of these theories resulted in a "superfluous energy" theory in which energy expended is an incidental concomitant of the pleasure and enthusiasm that play engenders. Both Schiller and Spencer suggested that play was relatively purposeless. They felt that play was an artificial exercise of power which occurred in default of a child's natural exercise. This power was so ready to discharge that children relieved themselves by simulated actions in place of real actions (Slobin, 1964).

This theory is helpful in that it sets the premise that children are very energetic and have nothing else to do but to play. It is, however, not a theory to explain play. Also, this theory does not help us understand the child's choice of play activities (Slobin, 1964).

Two major objections to this theory were noted by McLellan. One was that play must be the means whereby energy may be replaced or renewed by the child. If it were only surplus energy which motivated his actions, there would be a time lag before more or new supplies of energy were produced.

A second objection was raised by Ruth Griffiths, and cited by McLellan. She doubted that young children had excess energy. She cites the following characteristics of a young child: first, the inability to concentrate for a long time on intelligent work; second, the fact that young children need long hours of sleep and daily rest and third, the fact that a young child tires quickly, both physically and mentally. She continues by stating that when a young child finds an occupation that is capable of satisfying present needs of developing fantasy and satisfies his desire to experiment, a child's concentration becomes intense and no surplus energy is left over (McLellan, 1970).

Lazarus opposed the "surplus energy" theory and supports the "recreation" theory. For Lazarus, play is the opportunity for relaxation and the restoration of exhausted power. It is the result of activity of unused muscles. Rather than play being thought of as the opposite of work, perhaps one should consider it merely another kind of work--a change of occupation (Slobin, 1964).

The "rehearsal" theory of Karl Groos adds another dimension to the analysis of play, seeing it as a means of growth and development upon which value is placed. Groos considered the real essence of play to be "instinct." These "instincts" appear

before they are needed and play is the agency employed to develop these crude powers and to prepare these powers for life's use (Slobin, 1964; Scarfe, 1962).

Groos, in 1901, noticed the increasing dependency period and the decreasing importance of rigidly patterned instinctual behavior on the higher levels of the phylogenetic scale. He explained play in higher animals as a period of pre-exercise of skills which the organism needs in later life. Nature was teaching its immature members how to use their capacities. Both animals and children seem to have an innate ability to play. It is not that higher animals and man play because they are young, but rather that animals are young so that they may be able to play (Slobin, 1964).

At a certain point in time, the body can be strengthened. Muscle coordination is aided by appropriate play. This is also true of social skills, such as cooperation, self-discipline and self-reliance. Play, according to Groos' theory, can also be a safety valve for pent-up emotion (Slobin, 1964).

Groos postulates play as a means of growth and development. Scarfe, on the other hand, feels that Groos' theory is inadequate for humans since the rehearsal of the complex activity of adulthood is impossible (McLellan, 1970).

The "recapitulation" theory of G. Stanley Hall extends the rehearsal theory, stating that the adult and the child have important creative as well as repetitive elements in their lives. In this theory, every child is considered to repeat in his play activities the history of the race (Scarfe, 1962; Britt and

Janus, 1941). Bertrand Russell stated that it was biologically natural that children should in imagination live through the life of remote savage ancestors. Organisms practice behavioral sequences and learn contingencies and skills that will be used later in more goal-directed tasks. Full development is only assured if each successive stage is played out (Weisler and McCall, 1976). Play provides an outlet for all kinds of behavior no longer socially acceptable, such as aggression. Instead of repression, which will later have undersirable results, play provides the opportunity for working off these impulses which were once biologically important, but are now inconsistent with modern life (McLellan, 1970).

For James Sully, play is essentially the expression of childish imagination and ideas. Play has a two-fold significance. It has an imitative aspect where the child copies adult activities that are constantly impressing him and it has an expressive aspect, in which imaginative ideas are acted out (McLellan, 1970).

Psychological theories of play are varied. Psychoanalytic theory has regarded a young child's spontaneous play as a reflection not only of his emotional conflicts, but also of his developing intellectual competence. Play reduces psychic tension and affords the child mastery over his wishes to be "grown-up," and is a means of coping with emotional stress (Feitelson and Ross, 1973; Gilmore, 1966; Almy, 1967).

The psychoanalytic function of symbolic play consists of acted-out fantasies, which serve the pleasure principle by reducing anxiety and tension engendered by unpleasant previous

encounters with the environment. It also serves as a neurotic defense and as an outlet for unfulfilled wishes (Pulaski, 1970). One fact the psychoanalytic approach does not account for is the fact that play has a great deal to do with structuring the individual's view of himself and his world.

Patrick employed the term, "play," to include all human activities that are free and spontaneous, and which are pursued for their own sake. He conceived of play as self-developing and as supplying its own incentive. Rainwater's view was very similar in that it looked at play as a mode of behavior, either individual or collective, involving pleasurable activity not undertaken for the sake of reward beyond itself and performed during any age period of the individual (Britt and Janus, 1941).

Freud pointed to the free exercise of muscular activity as a source of considerable pleasure. Children repeat in their play everything that has made a great impression on them, even unpleasant experiences, since every fresh repetition helps to strengthen the mastery towards which the child strives (Britt and Janus, 1941). Play is a form of recognizing and rediscovering the familiar. A child's play is influenced by his dominant wish to be grown up and to be able to do what grown up people do. Play, according to Freud, is the means by which the child accomplishes his first great cultural and psychological achievements. Play is a language of expression and communication for the child. It is through playing out feelings that children master emotions that would otherwise overwhelm them.

Adults have become removed from the place where the child's world unfolds and fail to see it as he sees it. Until the eighteenth century, play and games of children were also the play and games of adults. Empathy and understanding existed and adults and children shared this meaningful experience (Britt and Janus, 1941).

Children in play and adults in dreams frequently reenact traumatic experiences at a cost of great psychic pain and anxiety. A child, according to Freud, has a great tendency to seek in play a degree of repetition of past experiences. This repetition permits him to develop a self-preparation for the trauma in retrospect and, as it were, gradually gain control over it. Also, repetition is explained on the basis of the pleasure involved in rediscovering and recognizing the familiar. It is the reassuring knowledge of the stability of the world that Freud sees as an objective of games. Freud views games as the ego's attempt to repeat actively a traumatic event which was earlier experienced passively. Children repeat through play unpleasurable experiences for the additional reason that they can master a powerful experience far more thoroughly by being active than they could by merely undergoing it passively (Klinger, 1969).

Freud feels that a child's play is probably a result of impulses that urge the child to exercise his capacities. Freud links the older theories of play and the twentieth century writers since his work appears in both periods.

Piaget theorized that play is the product of certain developmental stages of thinking through which all normal children

must pass. Adults respond automatically to reality both by bending reality to fit their current moods and expectations (assimilation) and by bending moods and expectations to fit reality (accommodation). Piaget continues this thought by stating that a child has an inherent tendency both to seek out objects and to bend objects to fit new response systems (schema).

Piaget defines play simply as any behavior which is characterized by a predominance of assimilation over accommodation. When this is the case the playing child is engaged in adopting experiences and making them his own by fitting the experiences into his schemata to meet the demands of reality. Play, to Piaget, is the application of the old schemata to new objects (Klinger, 1969; Piaget, 1962).

According to Piaget, the converse of play is imitation, which is the predominance of accommodation over assimilation. Distorted assimilation occurs when objects are imbued with purely subjective characteristics determined by the child's momentary play interests. Free assimilation refers to the combining of unrelated symbols into games or imaginary episodes (Dansky and Silverman, 1973).

Play reflects the child's progress. For Piaget, the construction of logical thought depends not only on the child's activity with material things, but also on his social collaboration with other children. Piaget assigns explorative manipulation of materials and objects an important place in the acquisition of a wealth of stored information which at a later stage becomes a foundation for a child's intellectual development (Almy, 1967).

Spontaneous play provides not only a means for practicing and thus consolidating or assimilating what one knows but also for confronting or accommodating to situations that may challenge and potentially revise that knowledge (Almy, 1967). Play permits a child to make intellectual responses in fantasy when he cannot make them in reality. This helps him to protect his feeling of autonomy. Cognitive psychologists have presented evidence to show that fantasy is a creative cognitive skill associated with the ability to control impulse and delay gratification (Pulaski, 1970; Sutton-Smith, 1967).

Piaget describes the evolution of a child's thought as it is revealed in his play. As a child grows, his experiences increase; and he mentally stores more and more information and constructs new and more effective ways of retrieving and applying information. Piaget theorizes that playing dramatically increases the number and complexity of schemata available. For Piaget, symbolic play is the vehicle for cognitive growth and increasing differentiation of the subjective and objective.

According to Piaget, the crucial factor in the decline of egocentric thought and the development of role-taking skills is peer interaction. During peer interaction the young child receives information dissonant from his own, thus creating a conflict whereby he is forced to recognize the point of view of other persons. If this occurs in a cognitive activity, then dissonant feedback can evoke a state of disequilibrium which when resolved, leads to a more mature level of logical thought (Piaget, 1962).

Waelder, too, defines play as the child's method of elaborating experience as a process of assimilation. He feels that assimilation occurs in a diluted form, because experiences are too large to grasp at once. Waelder agrees that through play, a child reveals fantasies, wishes and experiences in a symbolic way. Play liberates the child from both reality and the superego. This enables the child to master overwhelming experiences by gradual assimilation and through frequent repetition in play. Play is fantasy woven about a real object (Klinger, 1969).

Robinson's concept of play is that of a compensatory mechanism having the same origin and impetus as a daydream or fantasy. Impulses for which the child can find no outlet create a situation demanding compensation, which is then secured through make-believe activities. Claparede writes that play is a free pursuit of make-believe ends, that it is a "paradise of the as-if" (Britt and Janus, 1941).

Lewin's dynamic theory of play states that play deals with events which belong in one respect to the level of reality of the playing person. Whether or not an event is play must be determined in terms of the child's own life space. Lewin asserts that there are both material or visual components of play and conscious, unobservable aspects of play (Britt and Janus, 1941).

Sociologists feel that play provides model situations in which the child rehearses both the roles he will later occupy and the skills which will prove useful in later life (Sutton-Smith, 1967). The games that children use to act out these

social roles and events will vary from culture to culture depending on the models available for imitation (Slobin, 1964). Sociologically, Lois Murphy feels that play patterns of children are the mirror of the culture that surrounds them, and it is this culture that provides the raw material for their activity and fantasy (Britt and Janus, 1941). Whiting asserts that a child will covertly practice these roles that seem to him to carry special privilege although because of this status as a child he can not carry them out in reality (Slobin, 1964).

Lowenfeld conceives of play as an essential element of the passage from emotional immaturity to emotional maturity. Children deprived of adequate opportunities for constructive play are children who later grow up deficient in constructive imagination and inhibited in experience. Play, for children, is the expression of the child's relation to life. It is the repetition of experience, the demonstration of fantasy, the realization of the environment and a preparation for life (Britt and Janus, 1941).

Erikson looks at play as an attempt to bring into synchronization the bodily and social processes of which one is a part even while one remains a self. For Erikson, whose views could also be classified with psychoanalytical theory, the playing child advances to two new stages of real mastery: that of association with peers and that of the use of toys and equipment. Erikson defines play as a situation in which the ego can deal with experience by creating model situations and can

master reality by experiment and planning. The child gradually learns what potential play content can be admitted only to fantasy, and only to play by and with oneself, and what content can be shared with others. Erikson also sees play with others as a development of the Nursery School-age play in which the child at first treats others as things and then later reaches out into the "macrosphere," the world shared with others (Almy, 1967; Erikson, 1977). Erikson recognizes the curative properties of play. The playing out of problems enables a child to gain a sense of mastery. He is no longer being controlled, but instead becomes the controller of events (Feitelson and Ross, 1973).

George Mead feels that children develop social understanding through play by having to take the role of others. As a playing child shifts from one role to another, he is forced to change his perspective. He begins to assess his own abilities and those of others. He develops his own self-image (Slobin, 1964; Sutton-Smith, 1967).

Clinical play theory, as propounded by Schneersohn, distinguishes between useful work, which satisfies the concrete needs of the struggle for existence, and useless play, which stimulates what Schneersohn calls the "urge to the life struggle," and sustains the "tonus" of mental life. Productive play awakens the potential, intimate, creative forces of the child and brings him to a higher level of development. Destructive play awakens the child's primitive degrading potentialities, thus bringing him to a lower level of development (Britt and Janus, 1941).

Axline asserts that play therapy should be based upon the fact that play is the child's natural medium of self-expression. When a child plays freely he is expressing his personality, and this in turn helps him to release the feelings and attitudes that have been pushing to get out into the open (Slobin, 1964).

"Therapeutic effectiveness" was explained by Gilmore. Gilmore states that moderate anxiety arousal increases the child's preference for toys relevant to the source of his anxiety, but that severe anxiety arousal induces children to avoid anxiety and relevant toys. This extinction of anxiety is explained by controlled symbolic repetition of anxiety-provoking events in a relatively safe context (Gilmore, 1966).

The researcher has chosen the above references as representative of clinical theories of play in order to emphasize particular elements that are concerned with this study. Since this study does not deal with a clinical population, reviewing this area in depth was not deemed necessary.

Eclectic theories, which include a mixture of elements of biological, psychological, sociological and clinical themes, will now be considered. All of these theories seemed pertinent to the ongoing research, but could not be easily classified by the researcher into one of the aforementioned categories.

McLellan reviewed these theories in her book, The Question of Play (McLellan, 1970).

Froebel was called the "apostle of play." He stated that a child learns best through his spontaneous play. He was not concerned with what motivated the child to play. Rather, he

was convinced that play is an essential part of a child's life, especially if full and harmonious development is to be assured. According to Froebel, play is the highest expression of human development in childhood, for it alone is the free expression of what is in a child's soul. In order to release the inner good, a child must be helped, through play, to create and to become a part of the world around him. Play is the purest spiritual product of a child's life and from it springs everything that is good (McLellan, 1970).

Arthur Jersild saw play as the way a child moves from the tried and the known to the untried and the unknown. The child learns social behavior through make-believe situations. It is through this fantasy-oriented play that a child exercises interests and ideas. Play also provides the child with an outlet for behavior that is not always socially acceptable (McLellan, 1970).

Ruth Hartley states that the dramatic play of children between the ages of three and five-and one-half serves eight functions. It (1) imitates adults, (2) plays out real life roles, (3) reflects relationships and experiences, (4) expresses pressing needs, (5) releases unacceptable impulses, (6) reverses roles usually taken, (7) mirrors growth and, (8) works out problems and experiments with the problem's solutions (Hartley, 1971).

Gessell describes play as the preliminary exercise of serious adult activities. Deep absorbing play seems to be essential for full mental growth. Children give intense concentration to play and will derive immense emotional satisfaction from doing so. Gessell foresees danger in entertainment by

radio, films and television in that it does not allow children sufficient time or space for free spontaneous play (McLellan, 1970).

Ruth Griffiths states that through play a child learns to overcome obstacles and to bring himself closer to a relationship with the environment. Fantasy is important for emotional and intellectual development. Imagination is the child's method not so much of avoiding the problems presented by the environment, but of dealing with those problems in a fragmented and indirect fashion (McLellan, 1970).

Susan Isaacs and Piaget stress that many different kinds of play go on at once, yet there does seem to be a progression of stages. Isaacs views the child's own spontaneous play as a necessary element for Early Childhood, and she views play as an interaction of activities. Play helps to perfect bodily skills and muscular control. Play is concerned with those physical things in the world around a child that prompt the child to ask questions. This questioning develops reasoning and imaginative play, and provides a means of satisfying frustrated desires. It is this imaginative play that forms a bridge by which a child can pass from symbolic values of things to active inquiry into their real construction and real way of working (McLellan, 1970).

D.E.M. Gardner is very emphatic about the way in which parents and teachers can help a child gain fresh knowledge and experience through make-believe play. If they can provide a child with a rich, stimulating environment, they can lead a child to a new phase of play which may result in emotional intellectual and physical growth and development (McLellan, 1970).

There are of course, theories other than those reported in McLellan's book. White's definition of play includes the idea that it serves the goal of effectance, or control over animate or inanimate objects or situations, especially those that cannot be controlled or affected in reality. According to White, behavior is motivated by a striving for competent dealing with the environment (Klinger, 1969; Weisler and McCall, 1976). Langfeld reports that it is not an instinctual property of play that develops certain situations, but rather it is the interaction of the organism and environment that develops a certain activity (Britt and Janus, 1941).

Whether a given behavior is play or not cannot be determined from an adult's perspective, but only in terms of a child's own life space. Ghosh states that play is the highest kind of human development, constituting as it does the spontaneous expression of what is within (Britt and Janus, 1941).

James feels that play is instinctual. The impulse to play in special ways is certainly instinctive. Woodworth continues this idea by listing a series of instinctive activities as the bases of play: locomotion, vocalization, manipulation, laughter, exploration and self-assertion (Britt and Janus, 1941).

Dansky and Silverman state that play creates a set or an attitude to generate association to a variety of objects whether or not those objects are encountered during a play activity. Berzonsky continues by stating that concrete exper-

ience of play appears to have a bearing on the ability to distinguish a causal determinant from an irrelevant factor (Dansky and Silverman, 1975). Bruner feels that the function of play is to exercise and to develop behavioral subroutines which the child will later integrate into larger and more task-oriented sequences (Weisler and McCall, 1976).

Lowe found that in the second year of life a new type of play emerges. This play is called "pretend," or symbolic play, and it pre-supposes not only the child's action having acquired meaning in relation to the objects around him, but also his ability to represent an absent object or experience by his own action, usually with objects that resemble the represented object to a greater or lesser degree (Lowe, 1973).

Vygotsky asserts that the emergence of language makes symbolic activities possible. This is in contrast to Piaget, who states that language is a part of a more general intelligence that grows out of structures resulting from the child's interaction with his environment during the sensory-motor period. According to Vygotsky, play is the leading source of development in the preschool years. It is through play that thought becomes separated from objects and the ability to make abstractions becomes possible (Feitelson and Ross, 1973). Lunzer also sees play as an active form of representation before a child's language is sufficiently advanced. The degree

of organization is the most consistent indicator of play maturity (Lowe, 1973).

The researcher agrees with McLellan that none of the aforementioned theories adequately explains even one activity of a child, but that each theory has a contribution to make toward explaining a child's overall play behavior.

Categories of Play Behavior

Play behavior has been categorized by different researchers in different ways. Hurlock categorized play according to age. She lists types of play, types of materials, time spent in play and social participation with respect to the age groups of Babyhood, which includes ages birth to three years; Childhood, which extends from age three to age six; Youth, which extends from age six to age eleven; and Adolescence, which includes age eleven to age twenty-one. This study is primarily concerned with the first two age spans. She found that the desire for sensorimotor experiences leads the baby to earliest play. This play is characterized by sensory and motor experimentation, the use of large muscles, much repetition and self-centered and individualistic play. She reports that Blatz and Batt found two-year-old children to be solitary in their play, while three-year-old children played primarily with other children. During the Childhood play stage, according to Hurlock, children's play becomes more imaginative; it relates more to living conditions; it involves imitation and more skilled movement of the muscles; and it tends to be very individualistic (Hurlock, 1934).

Parten's categories of play are based on the extensity of social participation, or the number of social contacts made by an individual, and the intensity, or the kinds of groups participated in and the role of the individual in those groups. Her categories of play behavior are "unoccupied," "onlooker," "solitary," "parallel," "associative" and "cooperative." Unoccupied behavior is defined according to the following scheme:

The child apparently is not playing, but occupies himself with watching anything that happens to be of momentary interest. When there is nothing exciting taking place, he plays with his own body, gets on and off chairs, just stands around, follows the teacher or sits in one spot glancing around the room. (p. 249)

Onlooker behavior exhibits the following characteristics:

The child spends most of his time watching the other children play. He often talks to the children whom he is observing, asks questions, or gives suggestions, but does not overtly enter into the play himself. This type differs from the unoccupied in that the onlooker is definitely observing particular groups of children rather than anything that happens to be exciting. The child stands or sits within speaking distance of the group so he can see and hear everything that takes place. (p. 249)

Solitary play shows the following pattern:

The child plays alone and independently with toys that are different from those used by children within speaking distance and makes no effort to get close to other children. He pursues his own activity without reference to what others are doing. (p. 250)

Parallel play is described according to the following scheme:

The child plays independently, but the activity he chooses naturally brings him among other children. He plays with toys that are like those which the children around him are using, but he plays with the toy as he sees fit, and does not try to influence or modify the activity of the children near him. He plays beside rather than with the other children. There is no attempt to control the coming or going of children in the group. (p. 250)

Associative play exhibits the following characteristics:

The child plays with other children. The conversation concerns the common activity; there is a borrowing and lending of play material; following one another with trains or wagons; mild attempts to control which children may or may not play in the group. All the members engage in similar if not identical activity; there is no division of labor, and no organization of the activity of several individuals around any material goal or product. The children do not subordinate their individual interests to that of the group; instead, each child acts as he wishes. By his conversation with the other children one can tell that his interest is primarily in his associations, not in his activity. Occasionally, two or three children are engaged in no activity of any duration, but are merely doing what ever happens to draw the attention of any of them (p. 251).

Cooperative play has the following pattern:

The child plays in a group that is organized for the purpose of making some material product, or of striving to attain some competitive goal or of dramatizing situations of adult and group life or of playing formal games. There is a marked sense of belonging or of not belonging to the group. The control of the group situation is in the hands of one or two of the members who direct the activity of others. The goal as well as the method of attaining it necessitates a division of labor, taking of different roles by the various group members and the organization of activity so that the efforts of one child are supplemented by those of another (p. 251).

Shure argues that Parten's definition of parallel play must consider the size of the area available for play. According to Parten, parallel play involves playing near another child with the same or similar play material, but Shure feels that the fact that a child may play with similar play material but not near another child may be a function of the area available, not of the age of the child (Shure, 1963). In addition, with respect to Parten's categories of parallel and onlooker-unoccupied behavior, Rubin found a negative relationship between role-taking tasks and the amount of parallel and onlooker-unoccupied behavior.

However, role-taking skill was positively related to the amount of associative play (Rubin, 1976).

Barnes, for the purpose of data analysis, has grouped Parten's play behavior categories into two major categories, non-social behavior, that is, disruptive, unoccupied, solitary and onlooker, and social behavior, that is, parallel, associative and cooperative. "Disruptive" is a category exclusive to Barnes. This category refers to any activity the child may be engaged in which directly or indirectly disrupts another child's play behavior (Barnes, Wootton, and Wood, 1972). Smilansky's play categories have a sequential basis. They include "functional play," "constructive play," "dramatic play," and "games with rules." Smilansky's first category, "functional play," is simple repetitive muscle movement with or without objects. "Constructive play" involves the manipulation of objects to construct or create something. "Dramatic play" occurs when a child substitutes imaginary situations to satisfy the child's personal wishes and needs. Finally, "games with rules" occurs when a child is able to accept pre-arranged rules and adjustments to these rules. According to Smilansky, only dramatic play and games with rules involve symbolic or abstract thought. The first two categories, functional and constructive play, occur in much greater incidences than the more mature forms of play (Rubin and Maioni, 1975).

Other types of play behavior categories include Davis' types of "Random," "Imitative," "Imaginative" and "Reflective." "Random" play is observed when a child passes from kicking a

stone to picking it up and hurling it. It is play in which no mental force initiates the drive to act. It is, rather, the expressive power which reacts to an object in the field. Play is a chance activity which occurs only because time, objects and persons incidentally become involved and stimulated.

"Imitative" play is the type in which the child is a mimic of his world. Activities are patterned after those in his immediate surroundings. The child senses the behavior of others and copies it.

"Imaginative" play is play in which a child adds his unique contributions to random and imitative activities. The child acquires style, a touch of drama, inventiveness and colorful expressions that specify objects and concrete items. This type of play is identified through social interaction.

In "Reflective" play, the child controls the activity. Mental forces within the child can will certain behaviors to occur. These behaviors are either consciously or subconsciously controlled by the child, and they balance the elements within human behavior in the pattern selected by the individual.

All four categories of play interweave to form personality. All should be considered in terms of what they contribute to the whole individual. It should also be noted that the outward manifestations of children's behavior are patterned and orderly (Davis 1965).

Bettelheim's categories of play consist of "Fantasy," "Fantasy Play, and "Games." Respect for the demands and limitations of reality are first experienced and learned in play. "Fantasy Play" builds the bridges between the unconscious world

inside the child and the external reality around him. "Fantasy" and reality temper each other (Bettelheim, 1972).

Play has an outer and inner aspect. Any classification of play will differ according to whether the emphasis is laid upon the outer form or the inner content. For Lowenfeld, the outer form is classified four ways. The earliest form of play is bodily activity. Then play becomes a realization of experience. Following this, play is a demonstrator of fantasy; experience feeds fantasy and fantasy interrupts experience. Finally, play is an expression of the child's realization of his environment and is a means of expressing his new orientation (McLellan, 1970).

Underlying many categories of play are two basic forms of play. One form of play behavior is the type in which the activity is self-initiated, while the second form of play behavior is adult-prescribed, and is often initiated and directed by the nature of the available equipment in the environment (Almy, 1967).

Piaget rejects classification or categorization based on content or function. Instead, he attempts to interpret play through the "surface" of a child's thought. His three main types of play are: "practice games," in which sensorimotor actions are ends in themselves; "symbolic games," which involve thought and imply comparisons between a given and an imagined element; and "games with rules," which imply social relationships (Piaget, 1962).

If children are to achieve fully integrated personalities which will help them to become adults, with stable, balanced outlooks on life, they must pass through various stages of

development. Although different researchers have categorized play behavior in different ways, they all seem to agree on the necessity for providing a sufficient opportunity for free play, in which all-around development may be successfully achieved (McLellan, 1970).

SECTION II: PLAY BEHAVIOR AND THE YOUNG CHILD

It is through play that a child accomplishes his first great cultural and psychological achievements. Play behavior becomes an important factor in a child's life as he develops. Playful activity can provide children with the opportunity to organize their experiences and exercise their cognitive abilities in a manner that is likely to facilitate imaginative adaptation to future situations. It is the playing child that advances forward to new stages of mastery (Bettelheim, 1972; Almy, 1967; Dansky and Silverman, 1975).

Many studies have examined the role of socio-economic status, sex, density of the play area and age in determining a choice of play activities or partners in play. The amount of interest in play was not affected by social class, intelligence or time. These factors, however, did influence the constructiveness of play.

Boredom, as indicated by lack of interest, was influenced by social class. It was noted by Kniveton and Pike in 1972, that working class children reached boredom earlier than did children in other classes. Middle-class preschoolers, it was found, engage in significantly less parallel and functional

play and more associative and cooperative constructive play than did their lower class age mates (Rubin, Maioni and Hornung, 1976).

Weisler and McCall report that there is a tendency for lower class children in crowded metropolitan areas and children from rural communities to play less and show a lack of "construction play" relative to upper-middle-class children living in a culturally rich area. Hurlock reports a similar finding in that children from "good neighborhoods" stood far above those from "poor neighborhoods" in initiative and spontaneity in play. (Weisler and McCall, 1976; Hurlock, 1934).

Evidence has been found that social rearing conditions influence a variety of play attributes. High-IQ children have been reported to play more each day than those with lower IQ's. This play, however, is less social than that of the low-IQ child and the play exhibits fewer motor activities with objects. High-IQ children seem to be more involved and more resourceful in their activities (Weisler and McCall, 1976).

At the preschool level the role of sex in play was conflicting. Some researchers found no sex differences observed in play activity (Finley and Layne, 1971), while others found sex differences occurring in the types of play materials used and in the formation of social groups.

Males were found to play more often with construction toys such as blocks and females were found to play more often with creative toys such as painting and art work (Fagot and Patterson, 1969; Quilitch and Risley, 1973). The more structured the toy the more mobile were both sexes. Males spent

more time playing with novel toys and less time playing with familiar toys than did females (Rabinowitz and Moely, 1975). The male's play was more physical than sedentary or social. Males were more prone to engage in constructive type activities and adventure games than in nutrient and domestic activities (Switzky, Haywood and Isett, 1970).

Bridges reported that males at the age of four were found to prefer less definite occupations which involve hand-arm movement rather than finger movement. Males stayed with one activity for longer periods of time. Females, on the other hand, preferred definite tasks of shorter duration which involved following directions and which involved careful finger movement. Males were often more aggressive in play than females, whereas females exhibited significantly more prosocial behavior such as sharing (Hapkiewicz and Stone, 1974; Bridges, 1927).

Furthermore, first-born males played alone during free play time more often than later-born males. This was reversed for females (Moore, Evertson and Brophy, 1974).

Males displayed more active fantasy play than females. They also performed more make-believe play out-of-doors than did females. Females were interested in physical exercise that increased their alertness, while males preferred to master the technical, inanimate world, and to increase their body strength (Britt and Janus, 1941).

Both Gottfried's and Seay's study and Langlois' study reported that females spent more time in social orientation roles while males engaged in predominately independent structures

until they reached five years of age, at which time they engaged in integrative structures. Males and older children were engaged more frequently in peer social activity than females and younger children (Gottfried and Seay, 1974; Langlois, 1973).

Sex proved to be a determining factor on friendship. Chevaleva-Janowskaya found that groups between the ages of three and five were composed of both sexes. Hurlock elaborates on this and states that if unisexual groups existed, they tended to be male groups (Hurlock, 1934).

The density of the area in which play occurs affects the type of play behavior a young child exhibits. In high-density conditions, less aggression occurs on the individual level and more time is spent in solitary play and less time is spent in group activities. Loo, in 1971, noted that with an increase in density, females spent more time alone, tended to play in smaller groups, played significantly more with members of their own sex, and spent more time in the least used areas of the room (Loo, 1971).

However, for males an increase in density reduced the amount of locomotion, and play occurred in larger groups. It should be noted that when there was group activity for both male and female groups an increase in density produced an increase in conflict interactions (Bates and Bentler, 1973).

Another area investigated was that of the relationship of play to age differences. Finley and Layne reported that the number of play activities increase with age as does the amount of social play (Finley and Layne, 1971).

Some investigators have attempted to explain periodicity of play in terms of its causes. Some feel that different play

occurs at different ages because of instinct. Others feel a child's play interest depends on chronological age, mental age and the environmental situation (Weisler and McCall, 1976).

The younger the organism, the less experienced and the less familiar it is with common environmental stimuli, and as a result the less is its ability to process information. The infant will spend large numbers of hours exploring by sensorimotor investigation the environment. As childhood approaches, manipulation of objects goes from unspecific to specific and finally to meaningful manipulation. From eight and one half months to eleven and one half months, infant play becomes richer and is characterized by an increase in the manipulation as opposed to the mouthing of objects (Weisler and McCall, 1976).

Verbal interaction rates increase significantly from twenty-two to thirty months. With this rise in verbalization in play there is also a rise in fantasy play. Below the age of three there is a low level of fantasy play but during or after the age of three both imaginative play and imaginative verbalization arise. Imagination peaks at the age of four. At this time, children become more able to maintain their play with a given set of highly varied objects. Previously, as infants, children had performed routine functions in imaginative play with miniature replicas of real stimuli. As they become older, their attention will become directed at social objects and will be less dependent on the presence of realistic replicas (Weisler and McCall, 1976).

One study reported by Britt and Janus reports that the ability of the two and one-half to three and one-half-year old to hold materials such as clay or crayons as well as the extent to which he or she can be left to his or her own devices, will be reflected in the child's reaction to a change in the play environment. It was found that the deprivation of play materials led to playing with one's companions and attending to oneself (Britt and Janus, 1941).

Age three seems to be the time of rapid growth in spontaneous peer verbal interaction. Play becomes increasingly social. Older children are more likely to play social games and to play with toys that require cooperation and competition. More social interest in free play and more cooperative play are displayed by the four-year old (Klinger, 1969; Mueller, 1972; Quilitch and Risley, 1973).

Parten observed that social participation increased with age. Doll play situations involved the greatest amount of social cooperation. Parten stated that at two to two and one-half, a child preferred parallel play, and at three and one-half to four and one-half a child preferred associative play (Parten, 1932).

Barnes updated this study, and he found that there was significantly more unoccupied, solitary and onlooker activity at the three to four-year old level and significantly less associative and cooperative activity than had been recorded by Parten (Barnes, 1971).

Green, in 1933, reported that friendships increased with age. From the ages of two and three years there was an increase in the number of friendships, and from the ages of three to five

in the depth of friendships. It was noted that females had more friends and males formed deeper relationships (Green, 1933).

Another area that was related to age changes was that of the size of the play groups. As age increased, so did the size of the play groups (Parten, 1932).

Acus reported that as a child's age progresses so does his preference for a specific piece of play material. Three-year olds prefer the use of descriptive criteria over relational contextual criteria. Four and five-year olds prefer relational and contextual criteria. He also reports that color criteria has the greatest significance for females while shape has the greatest significance for males (Acus, 1973).

Play behavior is an important part of a young child's life. Since all levels of development can be expanded through play, it is important to study what can affect a child's play behavior, and what in a child's life is in turn affected by that child's play behavior.

SECTION III: THE IMPORTANCE OF PLAY IN EARLY CHILDHOOD EDUCATION

Play by children is a universal activity. It is during the years one to five that a child is expected to learn to cope with both the natural and the human world. As the child explores and manipulates, he cumulatively learns the "what" and "how" of the world around him (Frank, 1967).

Play is the most intensive and fruitful learning source in the child's life cycle. It is a complete educational process,

an adventure, a research activity, an experiment and a transactional process. According to Almy (1967), play and reasoning have several common elements: 1) neither play nor reasoning have direct and immediate consequences in the outer world; 2) in both play and in reasoning certain elements of reality are selected, and they are varied; 3) both play and reasoning are quicker than direct action in reality; 4) both play and reasoning are precipitated by an experience that is satisfactorily completed. In addition, play provides a way to understand experience (Almy, 1967).

It is reasonable to suppose that animals and children learn during the course of play. Klinger reports that play permits the accommodative stretching of available schemas which provide an "experiential bridge between an established cognitive repertory and a strange new set of circumstances." (Klinger, 1969, p. 293). He continues by stating that play serves to provide experiential continuity in a child's life.

Martinello (1973) states that play is a voluntary activity. That is, it is free and done by choice. If education is to be playful, a child must have free choice to interact with a teacher and materials. The exercise of free choice is at the heart of learning to learn. Choice implies preference, and preference to learn indicates a love of learning.

Martinello goes on to surmise that the school is where learning to play is synonymous with learning to learn. It is a place where life is pleasurable and where man achieves his noblest state (Martinello, 1973).

A school where children play to learn would be a place to escape from the real world, a place that stimulates the imagination. A child does not play for material interest, but rather loses himself in the pursuit of understanding. Prime importance should be given to the activity pursued. If free play is the way by which skills and attitudes that are conducive to innovative behavior are exercised and reinforced, then there is a strong need to reevaluate educational priorities at the preschool age (Feitelson and Ross, 1973).

Play fulfills a wide variety of purposes in the life of a child. It develops physical skills involving both large and small muscles. It develops intellectual skills. It helps the child to distinguish reality and fantasy. It helps the child to develop social skills, such as taking turns and participating in group interaction. It provides emotional value toward both positive and negative feelings as the child reacts to the activities in which he is involved.

Early studies of nursery school children have consistently identified active, vigorous, intense and rapidly paced play as a major component of preschool behavior. Spontaneous play provides a setting for the exercise of certain of the abilities involved in thinking and reasoning (Halverson and Waldrop, 1974; Almy, 1967).

Free play, according to Jean Chateau, reveals two factors of human thought. The first factor is *élan*, or activity involving the urge to move forward, or the will to surmount difficulties. The second factor is a sense of orderliness and

regularity. It is through play that the child seeks to educate himself and to do his best (McLellan, 1970).

Exploratory and play behavior in child subjects correlate highly with information-seeking in general. Play preferences are related to cognitive competence. Through play a child not only reveals his emotional needs and individual interest, but also his cognitive maturity (Lowe, 1973; Sutton-Smith, 1967).

All forms of play, according to McLellan (1970), have one thing in common: they are developmental in character. Play provides the stimulus for the development of intelligence. Children's play is more than mere activity or occupation which fills time. Play is the mirror of an individual's developmental pattern (Davis, 1965). In play the young child finds the activities and the occasions for discovering himself, his strength, his weakness, his skills and his instincts (Frank, 1967).

Ernest Harms, according to Davis, stressed the need for a more systematic arrangement of play description and observation. Unfortunately, many who deal with children, according to Hartley (1971), have not received the training to enable them to understand the kind of organic learning that proceeds from the knowledgeable use of play and the wise provision of play opportunity including enough uninterrupted time for play. Teachers need to reorganize their thinking concerning children's play behavior. They should, according to Davis, assume that a child's play behavior grows within a flexible, reverberating framework. The course of a child's play is uneven, yet patterned. It will zig-zag and spiral backward in a spring-like action which permits conceptual learning to occur (Davis, 1965).

In order to provide the best educational environment possible for the young child, McLellan (1970) suggests that one take seriously the concept of interaction as it relates to children and materials. Children interact with the environment based upon what they have done before. Playing and using play materials alone or with others evoke a child's energy, focus his attention, and direct his efforts. Schools must provide for a variation in the duration and scope of play engaged in by individuals. A child's environment should be a place where he may learn by playing with things, ideas and others (Martinello, 1973).

Play differs in various programs. Some play is self-initiated and is viewed as a major vehicle for learning, while other play is adult-prescribed and initiated. The teacher or adult responsibility according to Froebel was to prescribe certain activities for children. Under Montessori, the adult prepared the environment in such a way that children would use the toys and materials in a prescribed way. Rousseau saw the adult as establishing a safe and nurturing environment. Dewey and Piaget state that development and learning come about as the result of an interaction of the child and his environment, and adults must provide for and facilitate the use of materials to enhance the child's environment (Golubchick and Persky, 1977; Almy, 1967).

The teacher can set the stage for the child's play by rearranging materials and equipment, introducing unfamiliar materials and creating opportunities to associate with different playmates. But, to limit the play of the young child solely

to that structured by the adults would not only run counter to the child's typical patterns of behavior, but would also deny him the important opportunity to initiate and test his own ideas (Almy, 1967).

One of the major characteristics of Early Childhood Education is the use of materials to promote and foster children's learning and development. Almost all the programs provide the children with a variety of materials. Froebel created a variety of toys called "gifts" that were designed to help the child learn about the world and about himself. Montessori designed an elaborate set of materials to increase the child's ability to discriminate among stimuli and to order stimuli along various dimensions. For others, a critical relationship occurs between the child and his learning materials. Dewey emphasized the importance of the experiences. Thinking was promoted by allowing children to engage in concrete experiences. Piaget agrees that early sensorimotor experience with concrete objects plays a crucial role in the development of thought (Golubchick and Persky, 1977).

What a child does with materials is based upon prior acquisition of certain skills in addition to his attitudes and level of development. Children interact with materials in ways that make sense to them. Their attitude toward a particular material is a product of previous interaction or lack of interaction with materials. The child's attitude towards play was found by Bernstein and Young to be a reflection of his/her mother's attitude. Middle class mothers showed a greater ten-

dency to regard play as having an educational significance than did working class mothers (Kniveton and Pike, 1972).

Materials serve as a basis for arranging physical space and organizing the daily routine. While watching children at play with miniature life toys, one can see how children are building their life space, especially by the way they select, reject and manipulate materials (Frank, 1967).

The extent to which the classroom environment was structured affected involvement in role playing and creative responses to tasks. Creative children gave more responses in a rich environment than in a poor environment. Uncreative subjects showed no significant responses to environmental cues (Ward, 1969).

The degree of structure of the play things did not significantly affect the richness of the children's fantasy production. However, high fantasy children preferred moderately structured play things and low fantasy children preferred highly structured toys (Pulaski, 1970). Also, pretending or imaginative play was more likely to occur with objects that were moderately stylized or approximate representations of realistic stimuli (Weisler and McCall, 1976).

Playful activity can provide children with an opportunity to organize their experience and exercise their cognitive abilities in a manner that is likely to facilitate imaginative adaptation to future situations. Play creates the foundation for a set of associations to a variety of objects whether or not those objects are encountered during the actual

play activity. By being provided with an array of materials, a child is afforded a range of opportunities to develop and elaborate a repertoire of skills and concepts (Dansky and Silverman, 1973). Furthermore, Valentine, as reported by Feitelson and Ross (1973), felt that the development of play activities depends not only on the maturation or ripening of various inherent potentialities, but also upon the richness of play opportunities in the environment.

Johnson (1935) found that varying the amount of play material resulted in both immediate and long-term changes in behavior. Increasing the amount of material produced a lesser amount of undesirable behavior and fewer social contacts. Decreasing the amount of material produced an increase in the number of contacts with the teacher and an increase in the number of social conflicts. A long-term effect on behavior, according to Johnson, was that too much equipment may greatly interfere with social development. Eubank stated that when no equipment was found in the play area, there was a great amount of social involvement with decidedly negative overtones and aggressive behavior (Britt and Janus, 1941).

Smilansky found that disadvantaged children engaged in much less and poorer quality of role playing and sociodramatic play than did other children. This was found to be unrelated to the emotional atmosphere or to the quantity of toys within the home, but was attributed to the failure of the home to equip these children sufficiently with the required verbal, cognitive and social skills (Rosen, 1974).

Fenson, Sapper, and Minner (1974) found that the tempo of play was important. An infant grew bored rapidly with each of a series of toys presented in a fast tempo. In a slow tempo an infant was content to examine and play with a single toy for a sustained period.

Another area investigated was the effect that the amount of exposure to toys has on the child. Novel properties of the environment increase the response levels of the subjects exposed to those properties. As subjects cease to be able to do new things with the objects, their response to them decreases. A great increase in response level occurred for those objects with which the subjects can do the most things. Novel materials elicit play that Piaget called pure assimilation, because being new to the child and less than completely mastered, these materials have to be made to fit the child's available schemata (Gilmore, 1966; Sutton-Smith, 1967).

A novel stimulus is one that the organism has not previously encountered, does not remember, does not relate to previous experience and has no expectations concerning its form or function. A degree of novelty can be produced by varying the organism's familiarity with the stimulus (Weisler and McCall, 1976). Overt pleasure produced by play objects declines with repeated exposure. The rate of decline, according to Scholtz and Ellis (1975), is inversely determined by the complexity of play stimuli. For females the fixation and the habituation rate predicts the rate of saturation in play with familiar toys. It also predicts a preference for novel toys.

For males, attentiveness and the rate of saturation in play are uncorrelated (Fenson, Sapper, and Minner, 1974).

Dansky and Silverman (1973) found that subjects in play groups could name more non-standard uses for objects than subjects who used the objects in an imitative context or subjects who had no prior exposure to the objects. They also found that a young child's ability to produce alternative uses for objects was increased by brief periods of play with those objects. At times a new stimulus may bear some magnitude of physical or conceptual similarity to events remembered by the organism. It has been observed that a subject looks neither at what is too familiar, because he is in a way "surfeited" with it, nor at what is too new, because this does not correspond to anything in his schemas (Weisler and McCall, 1976).

Gilmore (1966) reports that according to Piaget, if a child is anxious he will prefer to play with toys on the basis of their relevance to the source of anxiety, whereas if the child is not anxious, he will prefer to play with toys on the basis of their novelty. Gilmore elaborates on this idea and states that it is not merely the presence or absence of anxiety, but also changes in the level of anxiety which has an influence on a child's choice of toys.

Frank (1967) asserts that if a young child has ample opportunity for play, he is likely to be better prepared for academic study and disciplined learning. In formal school years, a child needs play in order to relax and to release tensions in various ways.

If education can make room for play, then education can help children achieve goals. Children can then learn to derive more meaning from their education and their lives (Bettelheim, 1972).

SECTION IV: PLAY BEHAVIOR AND SOCIAL INTERACTION

One of the most difficult things a child has to learn is how to deal with his interpersonal relationships with adults and other children. Most of the basic learning for living and for social life cannot be taught formally. It must be learned through daily living, playing and enjoying opportunities available at each stage of the life cycle (Frank, 1967). Play has aspects of individual, creative meaning and construction, but it is through language and communication, that its meaning becomes more and more shared or social.

Three abilities, according to Garvey (1974), underlie social play: 1) the ability to distinguish play and non-play status, 2) the ability to abstract the organizing rule from its specific or local representation and 3) the ability to identify a theme of interaction and to contribute to its development. As these abilities increase, so does a child's ability to take different roles and to interact with peers in a reciprocal manner (Iwanaga, 1972). Garvey goes on to say that four states of interaction may obtain when two children are together: 1) social non-play occurs when the children explore objects together, 2) non-social non-play occurs when each child

independently explores objects, 3) social play occurs when both children are mutually involved in play, and 4) non-social play occurs when there is independent imaginative activity (Garvey, 1977).

Weisler and McCall (1976) describe the nature of social play as follows: first, a child plays in isolation without reference to what other children are doing. The first occurrence of social elements is the occurrence of parallel play, in which toys are chosen by a child, and the nature of his behavior is influenced by and may be similar to the behaviors of nearby children. No direct interaction is involved. Short interactions between children consist of socially instigated, but not truly interactive play. Later, full-scale play can be observed.

Children are sociocentric from birth, but lack the skills and talents necessary to interact. Interaction is initially concerned with manipulating the physical environment. This play is parallel and egocentric. Gradually, the child substitutes peers for objects. Now the child feels he can influence or control the other children in ways similar to objects. Language serves not only to coordinate the child's actions, but also to facilitate mutual engagement which has those actions as a focus. Language serves as a means of establishing and maintaining interpersonal contact (Garvey and Hogan, 1973).

Mueller (1972) reports that preschool children are interested in communicating with one another and do so quite capably in a free play setting. Rubin and Maioni (1975) feel

that it may be during this peer interaction that children take the roles of others and provide situations in which they learn to understand reciprocal relations. And it has been determined that the nursery school environment is indeed conducive to peer interactions.

Many investigators reported that the amount of social interaction, the size of the group, and the duration of social interaction in which a child engages during play increases with age (Green, 1933; Reuter and Yunik, 1973). According to Eckerman, Whatley and Kutz (1975), social play exceeds solitary play for two-year-olds and the social partner most often sought after by the two-year-old is the child's peer.

This increasing ability of a child to take differentiated roles and to interact with peers in a reciprocal manner is consistent with Piaget's discussion of the transition from initial egocentrism to reciprocity. Piaget found that peer interaction leads to a decline in egocentrism in childhood. For Piaget, children who are active and cooperative participants in peer interaction will be less egocentric than their less social agemates (Rubin, 1976; Piaget, 1962).

A fundamental aspect of personality development is socialization, in which a child acquires the beliefs and behavior patterns which will determine his relationships with other people. Heathers (1955) found that the child who absorbs himself in his own activities is somewhat less social than the child who is more readily distracted from solitary play.

Terman, according to Lehman and Witty (1928), found that gifted children were more solitary in play than were average children. The gifted child spent more time upon, engaged more frequently in and preferred to a greater extent activities which involved reading. These children, those with high IQ's, engaged in relatively few social activities.

The percentage of social interaction directed at peers and adults is a function of child/adult ratio (Murphy and Goldner, 1976). O'Connor (1975) reported that in settings with more adults present per child, the children interacted significantly more with adults and less with peers. This preference of preschool children for interaction with adults was found by Bronson to occur more often in a free-choice situation (Shores, Hester and Strain, 1976).

In studies on toy and activity preferences, however, children are more influenced by peers than by adults (Shallit, 1932; Wolf, 1975). As age increased, dependent contacts with adults decreased (Stith and Connor, 1962). Four-year olds showed less adult and more peer interaction and longer interaction duration than three-year olds. It was also found that males interacted more with both adults and peers than did females (Murphy and Goldner, 1976).

Selection of play materials should be an important consideration in any effort to teach children social behaviors. In one study, social play occurred during sixteen percent of the time when children were supplied with isolated toys, whereas social play occurred during seventy-eight percent of the time

when children were provided with social toys (Quilitch and Risley, 1973). In the following studies differences in social play were directly related to differences in play materials.

Hudson studied a group of four-year olds in order to develop an index of social value for materials. This index was determined by the average number of children playing together with each given material (Updegraff and Herbst, 1933). Hudson found that wooden blocks, doll houses, sand piles and see-saws occasioned much more multiple-child use than did other toys (Quilitch and Risley, 1973).

Van Alstyne's study based the estimate of the social value of materials on the amount of conversations and the amount of cooperation that occurred with the materials. Blocks, according to Van Alstyne, were high in social value, while clay was low in social value (Updegraff and Herbst, 1933). Quilitch and Risley (1973) said that in Van Alstyne's study, children most frequently played together around such toys as a wagon, dishes, blocks, doll houses and dump trucks.

Play is a great socializing force. Cooperation--the ability to get along with others, and the give and take which is so necessary to successful life adjustments--may be developed through such play materials as housekeeping toys, dishes, balls, blocks and games (Quilitch and Risley, 1973). In their own study, Updegraff and Herbst (1933) found that behavior of a sociable and cooperative type occurred more frequently with clay while non-sociable and non-cooperative behavior occurred at a higher frequency during play with blocks. Types of toys

given to children within a free-play setting had a pronounced and dramatic effect upon their social play and the amount of time spent playing cooperatively with each other (Quilitch and Risley, 1973).

Bridges (1927) noted that a definite advance took place in a child's social development when he became more interested in another child than in the exclusive possession or use of a certain material. Another advance found in older children was that they made more verbal suggestions to their partners, accepted more suggestions, had more conversations and were more sociable and more cooperative than younger children (Updegraff and Herbst, 1933).

According to Reuter and Yunik (1973), social interaction is the matrix within which important learning experiences occur for the preschool child. It is, therefore, important to consider the effect of play behavior on social interaction, and, thereby, its effect on learning.

SUMMARY

This limited review of literature provides evidence that 1) there is a great variety in definitions, theories, categories (and patterns) of play, that 2) play has a significant part to play in the Early Childhood Education curricula, and that 3) many aspects of a child's life and social development are affected by his/her play behavior. McLellan says,

One can never conclude a piece of work on a subject like play, for it is impossible to say the last word on it. There are always new ideas coming from current research which need to be evaluated. Also, there will always be the children who will constantly find new and fascinating ways in which to play (McLellan, 1976).

Chapter 3

METHODS

This study was designed to examine play behavior in 3- to 5-year old children, and the relationship of this behavior to the amount of material available. The study attempted to answer the following questions:

1. Is there a relationship between the amount of available play material and the amount of child-child interaction?
2. Is there a relationship between the amount of available play material and the amount of child-adult interaction?
3. Is there a relationship between the amount of available play material and the amount of non-social behavior?
4. Is there a relationship between the amount of available play material and the amount of social play behavior?

A repeated-measure research design across play material conditions was used to probe the research questions. Time sampling techniques were used to collect data from ten groups of children.

SUBJECTS

The total sample consisted of ten intact groups of children. Six of these intact classrooms were located at the National Child Research Center in Washington, D.C., and four intact classrooms were located at the Center for Young Child-

ren at the University of Maryland.

Permission was obtained to use both centers as populations (Appendix A), and permission forms were obtained from all parents of students participating in the study. The administrators of both the Center for Young Children and the National Child Research Center have their permission slips on file in their respective office.

One of the areas this study investigated was the number of child-child interactions which occurred during any given play behavior. In order to investigate this area it is important to note the sex composition of each intact group. In classroom A, B, C, D, and H, for each day of observation, the number of males per class exceeded or were equal to the number of females. In classroom E, F, I, and J, the number of females per classroom exceeded the number of males. In classroom G during day one, the number of females exceeded the number of males while for all other days the number of males exceeded the number of females. (Table 1)

The number of adult-child interactions are another area of investigation. It is important to note the number of adults and children which composed the classroom for each day of the study. (Table 2)

Another area investigated is that of social and non-social play behavior. The mean amount of prior group experience for the group as a whole may influence the type of play behavior observed. The researcher considers it important to

Table 1
Sex Distribution per Day for Each Class

Class	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Class A							
male	6	6	6	6	7	6	8
female	5	5	5	5	6	3	5
Class B							
male	8	7	8	8	7	8	5
female	2	1	2	2	1	2	1
Class C							
male	11	11	12	12	11	10	10
female	4	3	3	3	3	5	5
Class D							
male	7	6	6	7	7	2	8
female	5	5	6	6	6	0	5
Class E							
male	5	5	6	6	5	6	6
female	10	9	9	10	10	10	10
Class F							
male	5	5	5	5	5	5	5
female	7	8	9	10	11	9	10
Class G							
male	8	9	10	10	10	10	10
female	9	8	7	9	9	9	9
Class H							
male	5	5	5	3	5	4	5
female	3	3	3	3	2	2	3
Class I							
male	3	5	4	4	3	3	4
female	5	5	5	5	5	4	5
Class J							
male	6	6	6	6	6	5	6
female	9	9	9	8	8	7	8

Table 2
Adult-Child Composition per Day
for Each Class

Class	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Class A							
adults	3	3	4	3	4	4	3
children	11	11	11	11	13	9	13
Class B							
adults	4	5	4	4	4	4	5
children	10	8	10	10	8	10	6
Class C							
adults	3	4	3	3	3	3	3
children	15	14	15	15	14	15	15
Class D							
adults	5	3	4	4	3	3	4
children	13	11	12	13	13	2	13
Class E							
adults	2	2	2	3	2	2	2
children	15	14	15	16	15	16	16
Class F							
adults	2	3	2	3	2	2	2
children	12	13	14	15	16	14	15
Class G							
adults	3	2	2	2	2	2	2
children	17	17	17	19	19	19	19
Class H							
adults	2	1	2	1	1	1	1
children	8	8	8	6	7	6	8
Class I							
adults	2	2	2	2	2	2	2
children	8	10	9	9	8	7	9
Class J							
adults	2	2	2	2	2	2	2
children	15	15	15	14	14	12	14

investigate this factor.

The mean amount of prior group experience increased with respect to the age of the youngest child in the class with the exception of classroom B, C, and D. In the researcher's opinion the smallness of the variation in age span in some classes may account for the downward differences in prior group experience for classroom B, C, and D. It is also worth noting that in each classroom prior group experience had occurred. Also, all classes involved in this study had been formulated in August/September of 1977, so that approximately four months of intact group experience had occurred prior to this study. (Table 3)

Another interesting aspect of the composition of the groups studied is that classrooms F, G, and I each had one hearing-impaired child. These classrooms are involved in a research study using cued speech in which the adults in the classroom communicate to the hearing-impaired child both verbally and by the use of cues. The child responds physically and/or verbally. All other activities during free play are the same for all children.

COLLECTION OF THE DATA

A team of twelve female observers was trained to use a time sampling technique using a modified version of DUSOPAC. This training consisted of each observer attending a group meeting at which time training packets were distributed. These packets consisted of sample observation sheets, practice situa-

Table 3

Average Amount of Prior Group
Experience for Group as
a Whole

Center	Classroom	Age span of children	Prior group experience
Center for Young Children	A	3yrs. 3mo.-4yrs. 4mo.	1.07 years
	B	3yrs.10mo.-4yrs.11mo.	1.0 year
	C	4yrs. -5yrs. 4mo.	1.14 years
	D	5yrs. -5yrs.10mo.	2.35 years
National Child Research Center	E	2yrs. 5mo.-3yrs.	.5 years
	F	3yrs. 4mo.-4yrs. 1mo.	1.25 years
	G	3yrs.10mo.-5yrs. 3mo.	1.5 years
	H	3yrs. 3mo.-5yrs. 3mo.	1.3 years
	I	3yrs.11mo.-5yrs. 5mo.	1.7 years
	J	4yrs. 4mo.-7yrs. 2mo.	2.72 years

tions and definitions used in the modified version of DUSOPAC (Appendix B). The observers practiced with the use of videotapes and/or in the classrooms until each observer reached an acceptable interrater reliability score (Table 5). Each observer/observer team had one time-sequenced tape recorder upon which a timed recording was made so that the observer/observer team would observe for fifteen seconds and then record for ten seconds (Appendix C).

Each day the observers would choose at random five males and five females from the classroom in which they were observing. Each day this group of ten children would differ. The researcher's objective was to obtain a measure of play behavior for the total classroom and not for individual children. The observers' descriptions of each child (i.e. clothing colors) were recorded on the observation sheets in a certain order so that when a team observed a child they would both be observing the same child at the same time.

On some of the observation days there was an insufficient representation of one sex due to illness, weather conditions, etc. On these days fewer children were observed for longer periods of time in order to get an equal number of observations for the total group. The number of observational units per sex observed was kept constant by day, regardless of the number of children.

The children were observed for seven consecutive days by an observer or a team of observers. During the first two days, the observations were made of a normal classroom setting.

On the third day, 75 percent of the available material, more specifically 75 percent of the blocks, the dolls, the puzzles, the manipulative materials, the wheel toys, the easels, the clay, the creative art materials, the books, the housekeeping accessories, and the dress-up materials had been removed from the room, and then observations were made. On the fourth and fifth days, observations were again made of the normal classroom setting. On the sixth day, the same amount of material had been removed from each room, and again observations were made. The final day of observation was of the normal classroom setting. The design was as follows: A A B A A B A, where A was a normal day and B a treatment day.

The original design had planned for eight days of observation, the final two being of a normal classroom setting. Inclement weather forced the closing of the centers involved, thus making only seven days of observations possible.

In order to determine what materials were taken from each room, an inventory of all available materials was made. Seventy-five percent of these listed materials was calculated and that number of materials was removed. The integrity of the available material was considered and no material was partially removed (example: parts of puzzles, parts of games). The researcher chose at random what materials were removed. The shelf position for manipulative materials determined which manipulative materials were removed and which stayed (Appendix G).

Observation of the classes occurred during scheduled free play (Table 4). Each free play session lasted approximately one hour. However, the length of the free play did

Table 4
Time of Observation and Number
of Observers

Class	Time of Observation	Observer Number
A	9:30 - 10:30 AM	01, 02
B	1:30 - 2:30 PM	03, 04
C	9:30 - 10:30 AM	05, 06
D	1:30 - 2:30 PM	07, 08
E	9:00 - 10:00 AM	09
F	9:45 - 10:45 AM	10
G	10:00 - 10:45 AM	11, 12
H	12:45 - 1:30 PM	Researcher
I	10:10 - 11:20 AM	09
J	11:15 AM - 12:15 PM	11, 12

vary from day to day. The researcher equalized the classes by equating observational units instead of equalizing total free play time. That is to say, eight observational units per child per day were made. Since ten children were observed in each class a total of eighty observations per class per day were obtained. Each of these observations contained a play behavior code and a social interaction code.

All observations were made from observation booths with the exception of Classroom I. This classroom did not have a booth, so it was decided that the observer for that class should sit in the classroom with her tape recorder prior to the actual recording of data in order to familiarize the children with her presence.

INSTRUMENTATION

The instrument chosen for use in this study was the instrument DUSOPAC developed by Keith Barnes, et. al. in 1972. The instrument is a time sampling of the following categories of play behavior: D (Disruptive), U (Unoccupied), S (Solitary), O (Onlooker), P (Parallel), A (Associative), C (Cooperative). DUSOPAC was chosen because the behaviors it measures seemed to be the most appropriate for this study. It was then modified by using LeBlanc's social interaction scale (LeBlanc, Etzel, and Tyler, 1969) as a means of recording social interaction. The order of behaviors was ranked by the researcher in the order implicit in the acronym DUSOPAC so that the observers would know

which behavior to record in ambiguous situations. For the purpose of data analysis, these play behaviors were grouped into the following two categories by the author Barnes: Nonsocial (Disruptive, Unoccupied, Solitary and Onlooker) and Social (Parallel, Associative and Cooperative).

Continuous, systematic recording of play behavior occurred at fifteen second intervals. During each fifteen second interval one play behavior was recorded. If two play behaviors occurred during the same fifteen second interval, then the behavior highest on the scale was recorded. The rank order of the play behaviors is as follows: Disruptive was the lowest form of play behavior, followed by unoccupied, solitary, onlooker, parallel and associative, with cooperative being the highest form of play behavior. If no play behavior was observed a dot was recorded above the interval and another observation was made at a later time. For this study the frequency of the different play behaviors was recorded, not the duration of the play behavior.

In addition to the play behaviors recorded by the DUSOPAC, the observers also recorded with whom the child interacted during the fifteen second interval. For the purposes of this paper, Interaction Type I will be Child-Child Interaction (C), Interaction Type II will be Child-Adult Interaction (A), and Interaction Type III will be Child-Self Interaction (S). This addition was piloted by the researcher to see if it was feasible to record both social interaction and type of play behavior. It was determined feasible and it became part of the instrument.

It was discovered, however, that verbal and nonverbal types of interactions were not recordable in the participating classrooms without having the children wear individual microphones. Since the subjects were chosen at random daily it would not be feasible in the researcher's opinion to record this data. The researcher decided to drop this part of the observation sheet (Appendix E). All recordings were made in the top section without regard to whether or not the interaction was verbal or non-verbal.

RELIABILITY

Reliability of behavioral observation measures is defined in a variety of ways. One form of reliability is the amount of interobserver agreement. This can be estimated by correlating the observations of two or more observers (Kerlinger, 1964). In this study, interobserver or interrater reliability was established prior to the actual gathering of data. Each observer and the researcher independently observed the same five children for two fifteen-minute time segments. At the end of the observations the interrater reliability was calculated. The highest of the two rates was recorded for each observer (see Table 5). Some observers needed more than two sessions. The researcher worked with them until an acceptable rate was established.

This reliability had to be established for each of the components of the instrument. The reliability of 1.0 for some observers was due to the fact that for some of the observations

Interrater Reliability

Observer	D	U	S	O	P	A	C	Not Play
01	1.0	.66	.75	.75	.60	.50	1.0	.625
02	1.0	1.0	.60	.50	.833	.66	.818	.66
03	1.0	1.0	.50	.50	1.0	.50	1.0	.88
04	1.0	1.0	.545	.50	.50	.75	1.0	.80
05	1.0	.50	.60	.50	.50	.50	1.0	.55
06	1.0	1.0	.50	.50	.50	.50	1.0	.60
07	1.0	1.0	.636	.50	1.0	.50	1.0	.75
08	1.0	1.0	.636	.50	1.0	.50	1.0	.75
09	1.0	1.0	.50	.50	.50	.63	1.0	.50
10	1.0	1.0	1.0	1.0	1.0	.86	1.0	.50
11	1.0	1.0	.50	.83	.75	.67	1.0	.50
12	1.0	1.0	1.0	.83	1.0	.75	1.0	.50

Table 5 (continued)

Observer	DUSO	PAC	C	A	S
01	.636	.555	.80	.75	.80
02	.818	.5833	1.0	.857	.857
03	.571	.50	.75	.75	1.0
04	.642	.60	.75	.50	1.0
05	.80	.60	.66	.50	.88
06	.636	.636	1.0	.857	.818
07	.727	.833	1.0	.75	.75
08	.692	.750	.75	.60	.714
09	.625	.7058	.857	.50	.66
10	.90	.944	.769	.66	.60
11	.625	.80	.9	.66	.571
12	.888	.947	1.0	.8	.60

only one event of that particular behavior was observed and both the observer and the researcher agreed that it occurred. The following formula was used to establish interrater reliability (IR) for each behavior:

$$IR = \frac{\text{number of agreements}}{\text{number of agreements plus the number of disagreements}}$$

The behaviors were then collapsed into social and non-social categories and the interrater reliability was again calculated (Table 5). Because of the number of observers involved, the researcher found it more feasible to have each observer rated with the researcher rather than with each other. Brandt (1972) warns that lack of agreement may reflect insufficient training of the observers, ambiguous identification of characteristics to be rated or described, indistinguishable or overlapping categories, or observations that might have been made at somewhat different moments in time.

The first consideration in any observation system, according to Kerlinger, is to know clearly what is being observed. All variables should be defined precisely and unambiguously. All categories must be exhaustive and mutually exclusive. Ambiguous events permit error variance to occur. Theoretically, according to Kerlinger, one can attain a high degree of reliability by using small and easily observed and recorded units. But, in doing so, one may have reduced the behavior so that it no longer bears much resemblance to the behavior one intended to observe, and thus validity has been lost (Kerlinger, 1964). This researcher provided each observer with a training packet

consisting of the mutually exclusive definitions of Parten and Barnes (Appendix B).

A second aspect of reliability with respect to behavioral research concerns the inconsistencies of a single observer from one moment to another. Depending on whether or not the observer is bored or alert, his observations may be different at different times (Brandt, 1972). Random errors that occur are a result of a number of causes, such as temporary or momentary fatigue or fluctuations of memory or mood. Since reliability is defined through error, more error reflects greater unreliability while less error reflects greater reliability (Kerlinger, 1964). The time-sequenced tape used in this study allowed a thirty-second interval between each set of five observations for the observer to organize herself for the next five observations (Appendix C).

A third kind of reliability, according to Brandt, has to do with the variability of the trait itself. Human behavior is highly variable from one time to the next and from one situation to another. Brandt suggests collecting a considerable amount of observational data of the same trait and calculating the degree of similarity and dissimilarity over varying types of settings and time periods (Brandt, 1972).

Time sampling is the selection of behavioral units for observation at different points in time. Observational units can be chosen in a systematic or in a random way so as to be representative of a defined universe of behavior. Time sampling lacks continuity, contextual completeness and naturalness of

event sampling, but it is necessary if one is generalizing to a larger universe. Time sampling assures the investigator that his data are representative of a larger behavioral universe.

This is true, however, only of behaviors that occur frequently. Behaviors that occur infrequently have a high probability of escaping the sampling "net" unless huge samples are drawn. Therefore, for sampling error to be minimized in later statistical analysis, many repeated observations are necessary regardless of the behavior studied (Kerlinger, 1964; Brandt, 1972).

In this study, observations were made on repeated samples of the total population for seven days in order to obtain a more typical picture of behavior. By making a series of observations, both on the same day and on successive days, a score can be obtained that shows the number of times a subject exhibits a particular form of behavior. These scores, according to Van Dalen and Meyer (1962), lend themselves readily to statistical treatment.

The length of the observation interval depends upon the nature of the problem and the availability of subjects for the duration of the observation period. Research has revealed that several short, well-distributed observations provide a more typical picture of behavior than do a few long periods of observation (Van Dalen and Meyer, 1962). This researcher chose a fifteen-second observation time based on Gottfried's and Seay's study (1973), Harper's and Sander's study (1975) and from piloting this particular study.

Selltiz, Jahoda, Deutsch and Cook (1965) state that increasing the number of observers or the number of occasions during which each subject is observed would help to increase reliability. For some of the classrooms two observers were used. A periodic check was made as to the amount of agreement that occurred between the two observers. Only the observational data of the observer who scored the highest interrater reliability were reported. The other observer's results were used as a check on the recorded observer.

Reliability, according to Garrett (1951), depends on drawing an unbiased sample from the larger group. In this study the observers randomly chose five males and five females each day of observation in order to get an unbiased representation of the total class.

Selltiz, et al. (1965), report that each observer must achieve a degree of confidence in his or her own judgement before marking a given category. This researcher tried to accomplish this during the training of the observers by allowing time for the observers to ask questions and use the instrument before actual data collection.

Another source of unreliability is the constant error introduced by the observer because of distortion of his perceptions by his own needs or values. Selltiz, et al. (1965), suggests the idea of having two or more observers with different backgrounds to record events. The observers in this study had varied backgrounds: teachers, bookkeeper, art student, writer, ballet dancer, and a psychologist.

Reliability is a necessary but not sufficient condition for validity. Reliability merely provides the consistence which makes validity possible. If an observation is valid, it is reliable, but an observation that is reliable may or may not be valid.

VALIDITY

Validity is the degree to which an observational system actually describes what it purports to describe (M.C. Johnson, 1977). Validity pertains to the results of an evaluation instrument, not to the instrument itself. An observational scale can be valid only to the extent that recorded differences in scores represent actual differences in behavior rather than differences in the impressions of the observers (Brandt, 1972).

Internal validity is concerned with the question, did the experimental treatment make a difference in this specific instance? In naturalistic research, according to Brandt (1972), one must consider the maturation of the respondent during investigation, the loss of respondents from comparison groups and the fact that changes in observers or method of scoring may produce changes in the obtained measure. Brandt describes external validity as that validity concerned with the generalizability of the findings (Brandt, 1972).

Maturation was controlled in this study to the best of the researcher's ability by limiting the study to seven successive days. An attempt was made to control for the loss of subjects by equalizing the number of observations per class per day.

The observers for each class remained the same throughout the experiment.

This researcher attempted to analyze the validity of this research in the following way. The researcher checked for consistence among the base line or normal day scores. The mean scores for validity for all the normal days should be similar. Gronlund (1971) found that the comparison of scores before and after some particular treatment would help to support validation. Similarities were noted between the normal day means for the observation time (Table 6). These means were calculated from the data gathered from the teachers. At the end of each session, each teacher was asked to rate on a seven-point scale how representative the day had been (Appendix F). The results from this collection of data are reported in Table 6. The first treatment day was rated by the teachers as a more typical day than was the second treatment day.

Another form of validity considered by the researcher is face validity or validity criteria concerned with the degree to which an observational system actually measures what it purports to measure (M.C. Johnson, 1977, 131). In the researcher's opinion the chosen observational system measured what it purported to measure.

Table 6
Mean Values for Validity as Measured
by the Teachers^a

Classroom	Day 1	Day 2	Day 3 [≠]	Day 4	Day 5	Day 6 [≠]	Day 7
A	7	7	7	5	5	6	6
B	5	4	6	5	6	6	4
C	6	6	6	6	6	6	6
D	2	2	5	7	7	6	7
E	6	6	5	6	4	5	6
	6	6	5	6	4	5	6
F	7	6	7	7	4	4	7
	6	X	6	5	6	5	7
G	5	2	5	6	4	3	6
	6	2	4	6	2	3	5
H	6	7	6	5	3	4	7
I	7	4	4	4	7	1	4
J	7	6	6	6	6	6	6
	7	6	6	6	6	4	6
=	83	64	78	80	70	64	83
=	5.92	4.92	5.57	5.71	5.0	4.57	5.92

^a - Validity as rated by the teachers is based on a scale in which 1 = least representative of typical days behavior and 7 = most representative.

[≠] treatment day

X no data recorded for this day

Chapter 4

RESULTS

ANALYSIS OF THE DATA

The data collected by the observers were compiled and analyzed using a one-way Analysis of Variance (ANOVA) for a repeated measure design. An ANOVA was computed for each of the eleven variables (disruptive, unoccupied, solitary, onlooker, parallel, associative, cooperative, not play, child-child, child-adult, and child-self) using the Repeated Measure Program (RMP-3; Design 1: One Factor; Repetition on the A Factor) developed by Dr. C.M. Dayton of the University of Maryland. The Newman-Keuls test of ordered means was applied whenever any significant F ratio ($p < .05$) occurred.

The mean values of the total group were reported as absolute values but were not compared statistically to the other means unless a significant F was obtained, in which case the Newman-Keuls test was used to compare the means. The total mean values for each variable broken down by sex were also reported and a simple t-test was used to determine if the difference between male and female scores was significant.

QUESTIONS OF THE STUDY

This investigation contained four questions. Each question will be presented and the findings related to the question will be discussed. Data are presented in tabular form.

Table 7

Summary of Analysis of Variance
for Interaction Behavior

measure	df	F
Interaction Type I		
Child-Child		
both sexes	6,54	1.96
female	6,54	.59
male	6,54	2.08
Interaction Type II		
Child-Adult		
both sexes	6,54	1.31
female	6,54	1.21
male	6,54	1.02
Interaction Type III		
Child-Self		
both sexes	6,54	.84
female	6,54	.36
male	6,54	1.18

note: all F's statistically not significant at .05 level.

Table 8
Mean Scores for Types of Interaction

Interaction Type I Child-Child							
	Day 1	Day 2	Day 3 [≠]	Day 4	Day 5	Day 6 [≠]	Day 7
Both sexes	41.9	40.6	36.6	33.8	35.9	41.0	40.1
Female	18.4	20.0	18.0	16.5	16.3	19.2	18.6
Male	23.5	20.6	18.6	17.3	19.6	21.8	21.5

Interaction Type II Child-Adult							
Both sexes	9.8	10.7	13.7	15.7	13.3	12.2	14.5
Female	5.4	4.6	6.1	8.8	7.2	6.7	7.2
Male	4.4	6.1	7.6	6.9	6.1	5.5	7.3

Interaction Type III Child-Self							
Both sexes	28.3	28.7	29.7	30.5	30.8	26.8	25.4
Female	16.2	15.4	15.9	14.7	16.5	14.1	14.2
Male	12.1	13.3	13.8	15.8	14.3	12.7	11.2

[≠] treatment day

Table 9
Standard Deviation for Mean Scores for
Types of Interaction

Interaction Type I Child-Child							
	Day 1	Day 2	Day 3 [≠]	Day 4	Day 5	Day 6 [≠]	Day 7
Both sexes	16.196	12.598	16.561	16.745	16.432	14.106	11.435
Female	7.820	5.774	11.392	11.287	9.855	10.174	6.979
Male	9.168	8.276	7.412	9.019	5.147	7.772	5.986

Interaction Type II Child-Adult							
Both sexes	6.647	4.715	9.007	10.955	10.380	9.417	7.028
Female	3.340	3.373	4.771	7.786	7.598	6.533	5.514
Male	4.115	2.470	4.624	5.626	2.685	5.563	2.983

Interaction Type III Child-Self							
Both sexes	16.159	11.908	14.818	13.874	16.585	15.859	12.894
Female	8.311	5.985	10.038	9.650	10.448	9.597	6.746
Male	8.595	6.897	6.579	7.700	7.040	7.573	6.477

[≠] treatment day

Question 1

Is there a relationship between the amount of available play material and the amount of child-child interaction?

The amount of available play material did not significantly affect the amount of child-child interaction (Table 7). Little difference was noticed among the mean scores for both sexes for the frequency of occurrence of child-child interaction on either treatment day (Day 3 or Day 6) compared to the rest of the recorded days (Table 8).

When investigating this variable with respect to sex the researcher found the means for males and females to be significantly different (Table 10). For the first treatment day (Day 3), males and females had similar means, but for the second treatment day (Day 6) males exhibited more child-child interaction than did females. Males showed significantly more child-child (Type I) interaction behavior each day than did females (Table 10).

Question 2

Is there a relationship between the amount of available play material and the amount of child-adult interaction?

The amount of available play material did not significantly affect the amount of child-adult interaction (Table 7). Little difference was noticed between the number of child-adult interactions that occurred for either of the treatment days (Day 3 and Day 6) and the number of child-adult interactions that occurred on all other recorded days (Table 8).

When investigating this variable with respect to sex, the researcher found the means for males and females not to be significantly different (Table 7). However, a difference was noticed with respect to the absolute value of the means. For the first treatment day (Day 3) males showed more Type II or child-adult interaction than did females. For the second treatment day (Day 6) females showed more Type II interaction behavior than males. Overall, both sexes showed similar amounts of this behavior. For four days females showed more Type II behavior, and for three days males showed more Type II behavior. These days exhibited no particular pattern (Table 8).

It should also be noted that for type III interaction behavior (child-self interaction) varying the amount of play material had no significant effect (Table 7). Little difference was noted in the number of child-self interactions for either of the treatment days (Day 3 or Day 6) compared to the number of child-self interactions occurring on the other recorded days.

After computing a simple t-score, the researcher found the difference in the scores for males and females to be significant (Table 10). For both the first and second treatment days (Day 3 and Day 6) females displayed more type III interaction behavior than did males. For six out of the seven days observed, females showed more of this type of interaction than did males (Table 8).

Two general trends were noted with respect to interaction patterns. First, females displayed more type III interaction behavior and males displayed more type I interaction

Table 10

T Scores of Observations of Males and
Females Interaction Behavior

Interaction	total male score	total female score	t Score	Result
I Child-Child	1429 $\bar{x}=204.14$	1270 $\bar{x}=181.42$	3.537*	reject H_0 : con- clude males and females signifi- cantly different
II Child-Adult	439 $\bar{x}=62.71$	460 $\bar{x}=65.71$	-.5825	accept H_0 : males and females not significantly different
III Child-Self	932 $\bar{x}=133.14$	1070 $\bar{x}=152.85$	-3.2514*	reject H_0 : con- clude males and females signifi- cantly different

* $p < .05$

behavior (Table 8). A second trend was noticed with respect to the day of observation. On each day that observations occurred, regardless of treatment and regardless of sex, type I occurred with the most frequency. The next most frequently occurring type of interaction behavior for this population was type III and the least frequently occurring interaction behavior was type II.

Question 3

Is there a relationship between the amount of available play material and the amount of non-social play behavior?

The amount of available play material did not significantly affect the amount of non-social play observed. Non-social play was determined by the collapsing of the variables disruptive (D), unoccupied (U), solitary (S) and onlooker (O) (Table 11). The ANOVA on both the collapsed variable and each of the variables D, U, S, O showed no significant F's. After computing the t-score for each of the sexes within each variable the researcher found that a significant difference occurred between male and female scores for the collapsed variable of non-social. This was also true for the variables D and S. For the variables of U and O no significant differences were found between male and female scores (Table 12). Upon investigating the mean scores (Table 13), the researcher found that for non-social play behavior the most frequently occurring specific play was solitary play behavior and the least frequently occurring specific play was disruptive play behavior. The first treatment

Table 11
Summary of Analysis of Variance for
Non-Social Behavior

measure	df	F
Non-social		
both sexes	6,54	1.65
male	6,54	.98
female	6,54	.76
Disruptive		
both sexes	6,54	.83
male	6,54	.85
female	6,54	.65
Unoccupied		
both sexes	6,54	1.65
male	6,54	1.45
female	6,54	1.21
Solitary		
both sexes	6,54	1.18
male	6,54	.80
female	6,54	.82
Onlooker		
both sexes	6,54	.92
male	6,54	.31
female	6,54	1.83

Note: all F's statistically not significant at .05 level.

Table 12

T Scores of Observations of Males and
Females Non-Social Behavior

Behavior	total male score	total female score	t Score	Result
Non-Social (collapsed DUSO)	1167 $\bar{x}=166.71$	1267 $\bar{x}=181$	-3.191*	reject H_0 : con- clude male and female signifi- cantly different
Disruptive	27 $\bar{x}=3.85$	13 $\bar{x}=1.85$	2.54*	reject H_0 : con- clude male and female signifi- cantly different
Unoccupied	191 $\bar{x}=27.28$	171 $\bar{x}=24.42$	.9163	accept H_0 : male and female not significantly different
Solitary	700 $\bar{x}=100$	797 $\bar{x}=113.85$	-2.183*	reject H_0 : con- clude male and female signifi- cantly different
Onlooker	249 $\bar{x}=35.57$	286 $\bar{x}=40.85$	+ .029	accept H_0 : males and females not significantly different

* $p < .05$

Table 13
Mean Scores for Non-Social Behavior

Non Social (collapsed DUSO)							
	Day 1	Day 2	Day 3 [≠]	Day 4	Day 5	Day 6 [≠]	Day 7
Both sexes	35.0	32.9	38.2	37.9	35.6	31.0	32.8
Male	16.0	15.2	18.5	18.9	17.1	15.6	15.4
Female	19.0	17.7	19.7	19.0	18.5	15.4	17.4
Disruptive							
Both sexes	.9	.3	.9	.5	.7	.4	.3
Male	.7	.1	.5	.4	.5	.2	.3
Female	.2	.2	.4	.1	.2	.2	0
Unoccupied							
Both sexes	4.8	5.7	7.0	4.9	5.2	6.3	2.3
Male	3.0	2.5	4.0	3.0	2.6	2.8	1.2
Female	1.8	3.2	3.0	1.9	2.6	3.5	1.1
Solitary							
Both sexes	21.7	21.3	21.2	24.2	22.3	17.4	21.6
Male	8.5	9.6	10.4	11.2	10.9	8.8	10.6
Female	13.2	11.7	10.8	13.0	11.4	8.6	11.0
Onlooker							
Both sexes	7.6	5.6	9.1	8.3	7.4	6.9	8.6
Male	3.8	3.0	3.6	4.3	3.1	3.8	3.3
Female	3.8	2.6	5.5	4.0	4.3	3.1	5.3

[≠] treatment day

Table 14
Standard Deviations for Mean Scores
for Non-Social Behavior

Non-Social (collapsed DUSO)							
	Day 1	Day 2	Day 3 [≠]	Day 4	Day 5	Day 6 [≠]	Day 7
Both sexes	13.400	11.733	11.650	12.512	15.707	14.430	13.620
Male	8.353	8.053	7.397	7.894	7.445	7.919	6.415
Female	6.325	5.293	7.181	9.843	9.180	7.662	7.961

Disruptive							
Both sexes	1.287	.675	1.197	.707	.949	.516	.483
Male	1.059	.316	.972	.516	.707	.422	.483
Female	.422	.632	.699	.316	.422	.422	.000

Unoccupied							
Both sexes	3.910	2.908	4.784	4.067	5.287	5.458	1.567
Male	2.309	2.068	2.944	2.211	3.026	2.440	1.398
Female	2.860	2.251	2.160	3.446	2.914	3.689	1.287

Solitary							
Both sexes	7.334	6.977	10.207	11.073	11.086	7.834	10.035
Male	4.696	4.766	5.602	5.534	5.021	4.541	6.433
Female	4.566	3.401	6.426	10.739	7.074	4.949	6.394

Onlooker							
Both sexes	5.562	6.150	4.818	5.716	4.812	3.814	6.415
Male	3.795	3.859	1.955	3.831	2.470	2.530	2.163
Female	2.486	2.797	3.659	3.091	2.497	2.514	5.187

[≠] treatment day

day (Day 3) had a larger total score of non-social play behavior than social play behavior, but the second treatment day (Day 6) had more social play behavior than non-social play behavior.

For the first treatment day, for non-social play behavior as recorded by the mean scores (Table 13) more females than males displayed non-social play behavior. For the second treatment day, more males than females displayed non-social play behavior.

When investigating each of the specific play variables that make up the non-social response, one finds some interesting trends. Males displayed more disruptive play behavior than females on the first treatment day, but both males and females displayed similar frequencies of disruptive play behavior on the second treatment day. More disruptive play behavior occurred on the first treatment day than on the second treatment day.

Unoccupied play behavior occurred more frequently among males than females on the first treatment day and less frequently for males than females on the second treatment day. A greater number of occurrences of unoccupied play behavior appeared on the first treatment day than on the second.

Solitary play behavior also exhibited differences in the frequency of its occurrences with respect to sex. More females than males exhibited this behavior on the first treatment day and more males than females on the second treatment day. A greater frequency of occurrences of solitary play behavior appeared on the first treatment day than on the second treatment day.

Onlooker play behavior reflected the same pattern of sex difference as did solitary play behavior, in that more females than males exhibited this type of behavior on the first treatment day and more males than females exhibited this type of behavior on the second treatment day. Again, a greater number of occurrences of this behavior was recorded for the first treatment day than for the second treatment day.

Question 4

Is there a relationship between the amount of available play material and the amount of social play?

The amount of available play material did significantly affect the amount of social play. Social play was determined by collapsing the variables parallel (P), associative (A), and cooperative (C) (Table 15). The ANOVA on both the collapsed variable of social behavior and the variable of P showed significant F scores at the .05 level of significance. The variables A and C were not significant.

The Newman-Keuls test of ordered means was applied to both significant F ratios ($p < .05$) for social and for parallel play in order to determine which means were responsible for the significant F's. Newman-Keuls revealed the means of social behavior to be significant between Day 3 and Day 2, Day 3 and Day 6 and Day 3 and Day 7. The Newman-Keuls revealed the parallel behavior mean only between Day 3 and Day 2, Day 3 and Day 7, and Day 4 and Day 7 to be significant. The differences among these means were reliable by a Newman-Keuls test ($p < .05$) (Table 16).

Table 15
Summary of Analysis of Variance
for Social Behavior

measure	df	F
Social		
both sexes	6,54	2.65*
male	6,54	1.35
female	6,54	1.49
Parallel		
both sexes	6,54	2.68*
male	6,54	1.67
female	6,54	2.27*
Associative		
both sexes	6,54	.80
male	6,54	.76
female	6,54	.30
Cooperative		
both sexes	6,54	1.25
male	6,54	.36
female	6,54	1.11

* $p < .05$

Note: all other F's statistically not significant at the .05 level.

Table 16
Newman-Keuls Test of
Ordered Means

Question 4

I Social Play Behavior

	Day 2	Day 6 [≠]	Day 7
Day 3 [≠]	**	**	**

II Parallel Play Behavior

	Day 2	Day 7
Day 3 [≠]	**	**
Day 4		**

** significant at the .05 level

[≠] treatment day

Upon computing a t-score for each of the sexes within each variable the researcher found that a significant difference occurred between the male and female scores for the collapsed variable of social play behavior and for both the A and the C variables. However, for the variable P no significant difference was found between the male and female scores (Table 17).

Furthermore, in investigating the mean scores (Table 18) one finds that under the category of social play behavior the most often occurring score is parallel play behavior while the least frequently occurring score is cooperative play behavior. On all normal days except the one immediately following the first treatment day and on the second treatment day social play behavior occurred more often than non-social play behavior. For the first treatment day, however, non-social play behavior occurred more frequently than did social play behavior.

On the first treatment day, males exhibited a higher frequency of social play than did females, as indicated by their mean scores for social play. For the second treatment day, females, more so than males, displayed this behavior. The second treatment day also had more occurrences of social play behavior than did the first treatment day.

Upon investigating the specific play variables that make up the category of social play behavior, one finds some interesting trends. Males displayed more parallel play behavior than did females on the first treatment day, but not on the second treatment day. Associative play behavior occurred more frequently among females than males during the first treatment

Table 17

T Scores of Observations of Males and
Females Social Behavior

Behavior	Total	Total	t Score	Result
Social	1348 $\bar{x}=192.57$	1241 $\bar{x}=177.28$	3.804*	reject H_0 : con- clude males and females signifi- cantly different
Parallel	716 $\bar{x}=102.28$	725 $\bar{x}=103.57$	-.1840	accept H_0 : males and females not significantly different
Associative	401 $\bar{x}=57.28$	339 $\bar{x}=48.42$	3.283*	reject H_0 : con- clude males and females signifi- cantly different
Cooperative	231 $\bar{x}=33.00$	177 $\bar{x}=25.28$	2.095*	reject H_0 : con- clude males and females signifi- cantly different

* $p < .05$

Table 18
Mean Scores for Social Behavior

Social (collapsed PAC)							
	Day 1	Day 2	Day 3 [≠]	Day 4	Day 5	Day 6 [≠]	Day 7
Both sexes	37.0	40.5	29.0	36.0	36.6	39.8	40.0
Male	19.8	21.2	15.3	18.7	19.7	19.8	20.3
Female	17.2	19.3	13.7	17.3	16.9	20.0	19.7
Parallel							
Both sexes	19.3	24.8	15.7	15.8	22.0	19.8	26.7
Male	9.9	13.3	8.3	8.1	11.4	9.0	11.6
Female	9.4	11.5	7.4	7.7	10.6	10.8	15.1
Associative							
Both sexes	11.4	9.8	8.6	13.5	9.0	11.7	10.0
Male	6.2	5.1	4.2	7.4	4.6	6.6	6.0
Female	5.2	4.7	4.4	6.1	4.4	5.1	4.0
Cooperative							
Both sexes	6.3	5.9	4.7	6.7	5.6	8.3	3.3
Male	3.7	2.8	2.8	3.2	3.7	4.2	2.7
Female	2.6	3.1	1.9	3.5	1.9	4.1	.6

[≠] treatment day

Table 19
Standard Deviations for Mean Scores for
Social Behavior

Social (collapsed PAC)							
	Day 1	Day 2	Day 3 [≠]	Day 4	Day 5	Day 6 [≠]	Day 7
Both sexes	8.313	12.331	12.383	13.507	15.987	12.282	12.019
Male	6.546	8.804	7.499	8.642	7.484	7.162	5.736
Female	4.367	5.945	6.343	9.546	10.071	7.272	7.134

Parallel							
Both sexes	13.937	17.171	12.419	14.995	16.918	15.690	15.041
Male	8.711	10.067	7.181	7.370	8.618	7.874	7.662
Female	5.602	7.920	6.518	8.731	10.013	9.211	8.595

Associative							
Both sexes	6.518	6.334	6.736	9.241	7.775	12.650	8.919
Male	3.882	4.886	3.190	6.398	7.090	7.397	5.696
Female	4.104	3.466	4.088	5.486	5.038	6.082	4.497

Cooperative							
Both sexes	9.569	9.098	8.138	10.188	8.072	13.752	5.012
Male	7.469	4.566	4.517	5.574	7.288	7.068	3.860
Female	4.115	4.701	3.695	5.583	2.885	8.634	1.578

[≠] treatment day

and among more males than females during the second treatment day. Cooperative play behavior occurred more frequently among males than females on both the first and second treatment days. For all three specific play variables, parallel, associative and cooperative, the second treatment day had a greater number of occurrences of each of those behaviors than did the first treatment day.

Overall, for the full seven days, males displayed more disruptive, unoccupied, associative, cooperative, parallel and social play behaviors than did females. Females displayed more solitary, onlooker, and non-social play behaviors than did males.

Because one of the questions being investigated was interaction patterns, it was necessary to include the category of "Not-Play" in order to record interactions during the free play period that were not play-related.

The F score for the category of Not-Play was not significant. The t-score demonstrated that males and females did not differ significantly with respect to Not-Play. No trend was found in the means for Not-Play. For three days females displayed more Not-Play and for three days males displayed more Not-Play. For one day, both males and females displayed the same number of Not-Play occurrences. The treatment days contained more occurrences of this variable than did the normal days. The first treatment day contained more occurrences than did the second treatment day (Table 20).

Table 20

Values for the Variable Not-Play

A. Summary of the Analysis of Variance

<u>measure</u>	<u>df</u>	<u>F</u>
both sexes	6,54	1.79
male	6,54	1.76
female	6,54	1.11

note: all F scores were statistically non-significant at .05 level.

B. t-Score Value

<u>behavior</u>	<u>total male score</u>	<u>total female score</u>	<u>t-score</u>	<u>result</u>
Not-Play	285 $\bar{x}=40.71$	292 $\bar{x}=41.71$	-.2598	accept H_0 : males and females not significantly different

C Summary of Mean Scores

	Day 1	Day 2	Day 3 [≠]	Day 4	Day 5	Day 6 [≠]	Day 7
both sexes	8.0	6.6	12.8	6.1	7.8	9.2	7.2
male	4.2	3.6	6.2	2.4	3.2	4.6	4.3
female	3.8	3.0	6.6	3.7	4.6	4.6	2.9

D. Standard Deviations for Mean Scores

both sexes	8.731	4.377	10.031	5.587	6.125	8.854	7.772
male	3.553	2.951	5.594	2.366	2.936	3.950	3.622
female	5.940	3.197	6.433	3.713	5.211	5.542	4.332

[≠] treatment day

Chapter 5

SUMMARY, DISCUSSION AND RECOMMENDATIONS

The purpose of this study was to examine play behavior in three- to five-year-old children, and the relationship of this behavior to the amount of play material available. More specifically the researcher investigated the relationship between a decrease in the amount of available play material and:

- 1) the amount of child-child interaction
- 2) the amount of child-adult interaction
- 3) the amount of non-social play behavior
- 4) the amount of social play behavior

SUMMARY OF THE FINDINGS

1. No significant relationship was found between the amount of available play material and the amount of child-child interaction. However, upon further investigation of the mean scores for interaction, it was found that males showed significantly more child-child interaction than did the females. This finding agreed with the findings of Murphy and Goldner (1976) that males interact more than females.

2. The amount of available play material did not significantly affect the amount of child-adult interaction. Upon investigation of the means no significant differences were found between the sexes. Both sexes showed a similar amount of this interaction overall.

3. The amount of available play material did not significantly affect the amount of non-social play behavior, nor did it significantly effect disruptive, unoccupied, solitary or onlooker behavior. In this study more non-social behavior than social behavior occurred during the first treatment day. This finding agrees with Eubank's study reported by Britt and Janus (1941). In Eubank's study, when no equipment was found in a play area there was a great amount of social involvement with decidedly negative overtones and aggressive behavior. On the day of the second treatment in this study, this researcher found that the opposite was true: more social play behavior than non-social play behavior was recorded . Further investigation of the mean scores for play behavior revealed that the difference between the sexes with respect to the frequency of non-social play was found to be significant.

4. The amount of available play material did significantly affect the amount of social play behavior. Less social play was observed when the material was removed from the classroom than when the material was present. This was true for the first treatment day only (Table 18). The amount of parallel play was also significantly affected, although the amount of associative and cooperative play behavior was not significantly affected. For each of the variables (parallel, associative, cooperative and social) the frequency of occurrence was greater on the second treatment day than on the first.

Males displayed more parallel and cooperative behavior than did females on the first treatment day. The differences

in the scores of associative and cooperative play according to sex were found to be significant based upon further investigation of the mean scores for these play behaviors.

DISCUSSION

The absence of play materials brought about no significant increase or decrease in the frequency of occurrence of any type of interaction during the treatment days. The findings in the present study were not supported by Britt and Janus, who report that deprivation of play materials leads to an increase in play with one's companions. The difference in the findings may be attributed to the abundance of play material that was contained in all the classrooms. It is possible that the removal of seventy-five percent of this large amount of play material was not enough to affect play behavior. The amount left after the removal in all classrooms still allowed each child to make a choice from more than one toy (Appendix G). It may be that the child in the classroom observed in this study is so thoroughly saturated with play materials in the classroom that removing some of the play material would not affect his play behavior, simply because there would still be a large amount of play materials available.

Because some of the F 's were close to the significance level, a stronger test of the hypothesis may yield significant results. Perhaps in a further study the researcher should take away ninety percent or even one hundred percent of the available play materials to see if removal of that large an amount would have an effect on behavior.

The same patterns of interaction behavior occurred each day of observation regardless of treatment. The most frequently occurring form of interaction was child-child interaction followed by child-self interaction and the least occurring form of interaction was child-adult interaction. This may possibly be explained by the age of the children included in the population studied. This finding agrees with Klinger (1969), Mueller (1972) and Quilitch and Risley (1973) who found that age three was the time of rapid growth in spontaneous peer verbal interaction. This same pattern occurred even in classrooms F, G and I, which contained hearing-impaired children.

Females in this study were found to display more child-self interaction and males were found to display more child-child interaction. This may, in the researcher's opinion, be a result of the type of play in which each sex tends to become involved. Fagot and Patterson (1969) and Quilitch and Risley (1973) stated that males played more often with construction toys such as blocks, implying some kind of self-other involvement, whereas females were found to play more often with creative toys, such as painting and art work, which would involve much child-self interaction. Another possible explanation for males displaying more child-child interaction may be the fact that even though the number of observations per day per sex was constant, the total composition of all the groups per day contained more males than females. Therefore, it is possible that males had more opportunity for child-child interaction within sex (Table 1). This is in agreement with Hurlock (1934) who stated that if unisexual groups existed, they tended to be male groups.

Murphy and Goldner (1976), O'Connor (1975) and Bronson (as reported in Shores, Hester and Strain (1976)) all reported that in those situations in which more adults were present, children would interact significantly more with adults than with peers. In this study the opposite occurred. In this study the highest adult-child ratio occurred on Day 6 (Class D) and lowest adult-child ratio occurred on Days 4, 5, 6 and 7 (Class G) (Table 2). On all days, more child-child interaction was recorded than child-adult interaction, implying that adult-child ratios have no effect on the amount of child-adult interaction, at least in this study.

For both treatment days no increase was noted in child-adult interaction. This finding was not supported by Johnson's (1935) finding that decreasing the amount of material leads to an increase in the number of contacts with the teacher. This researcher feels that one possible explanation for this is that the function of the teachers in the present study's classrooms may differ significantly from that of Johnson's teacher. There were also differences in the arrangement of the observed classrooms. The observations in the present study were made inside the classroom and those in Johnson's study were made out-of-doors. The nearness of the teacher to the child in the present study may have been sufficient in terms of accessibility and no interaction was necessary, whereas in the out-of-doors the teacher may have been a greater distance from the child, forcing the child to make a special effort to make contact with the teacher in order to have his needs met.

More males than females were found in this study to display disruptive, unoccupied, associative, cooperative, parallel and social behavior. Females displayed more solitary, on-looker, and non-social behavior than did males. This finding is in conflict with Langlois, Gottfried and Seay's (1973) study, which stated that females spent more time in social orientation roles than did males. This research also disagrees with the study by Switzky, Haywood and Isett (1970) that found male's play to be more physical than sedentary or social. The present research is supported by the study by Hapkiewicz and Stone (1974) which found males to be more aggressive in play than females. (In this study males displayed more disruptive behavior than females).

Johnson (1935) found in her study that the decrease in the amount of material led to an increase in the number of social conflicts. The number of social conflicts that occurred during the treatment days in this study were few and their level of intensity was low as defined by the frequency of disruptive behavior (Table 13). One interesting fact noted in this study was that a greater frequency of disruptive behavior occurred during the first treatment day than during the second treatment day. This may be due to the fact that by the second treatment day the children had already experienced the loss and return of the materials to the classroom. Because a particular activity was repeated within a short period of time it perhaps became more familiar and, therefore, less threatening.

According to the narrative comments recorded by the teachers and found in the Appendix (Appendix I), few children

were reported to have made responses concerning the absence of toys, and for those who did, the answer that the toys were borrowed seemed to satisfy them. Other narrative comments of the teachers proved interesting. Prior to the observations the researcher held meetings with the teachers to answer any questions they might have had concerning what to expect during the observations and the teachers seemed somewhat apprehensive at that time. However, the comments contained in Appendix I showed a gradual decrease in this feeling of apprehension. This change in the teacher's attitude may have some influence on the diminished apprehension evidenced on the second treatment day (Appendix I).

RECOMMENDATIONS FOR EDUCATION

This researcher would like to suggest the following recommendations for Education:

- 1) Greater emphasis should be placed on the quality rather than the quantity of play material for the classroom.
- 2) Teachers in teacher preparation classes should be made aware of the relationship between the amount of materials in the classroom and the play behavior of a young child.
- 3) Studies in Education should be dynamic and readily updated or supplemented to reflect for changes that occur in society.
- 4) The findings of this study could possibly aid teachers, administrators, and parents in their planning for an environment conducive to the growth and development of a young child.

SUGGESTIONS FOR FURTHER RESEARCH

Play is a leading source of development for the young child and is an important way for the child to accumulate information about himself and his world. The researcher feels that further work in this area is important. Some suggestions for further research are:

- 1) an investigation into the importance of the chronological age of the child in terms of the effect of the variation in the availability of play materials on the child's play behavior (Table 3).
- 2) an investigation into the effect that the removal of a major amount, say, ninety to one hundred percent of play materials, would have on play behavior.
- 3) an investigation in which a normal, or base day would be one in which seventy-five percent of the toys had been removed and a treatment day would be one in which fifty percent of that baseline amount would be removed.
- 4) an investigation into the effect the removal of play materials has on the teacher involvement and interaction with the children.
- 5) an investigation into the possible variation in the effect of the removal of materials between the beginning and the end of the school year.
- 6) an investigation into the effect of the differing types of play materials on children of varying ages.
- 7) an investigation into the number of times certain play materials are used and the amount of time spent with these play materials.

APPENDIX A

PERMISSION LETTERS--SCHOOLS

2032A Fort Davis St. SE
Washington, DC 20020
December , 1977

Dr. Kathleen Amershek
Department of Early Childhood Education
University of Maryland
College Park, MD 20742

Dear Dr. Amershek:

I would like permission to use the Center for Young Children as a population for my dissertation research.

The observations would be made from the observation booths by two observers for eight consecutive school days beginning January 23, 1978, and ending February 1, 1978, inclusive. I would like to observe a free play setting in Mrs. Murtryn's and Mrs. Tinney's rooms from 9:30-10:30 a.m. and a free play setting in Mrs. Daniel's and Mrs. Cohen's rooms from 1:30-2:30 p.m. Enclosed is a copy of my proposal.

Thank you for time and consideration.

Sincerely,

Ann Rechsteiner

Encl.

2032A Fort Davis St. SE
Washington, DC 20020
December , 1977

Mrs. Jill Tailsman, Research Coordinator
National Child Research Center
3209 Highland Place NW
Washington, DC 20008

Dear Mrs. Tailsman:

I would like permission to use the National Child Research Center as a population for my dissertation research.

The observations would be made from the observation booths by two observers for eight consecutive school days beginning February 6, 1978, and ending February 15, 1978, inclusive. I would like to observe one hour of free play daily in each of the six classrooms. Enclosed is a copy of my proposal.

Thank you for your time and consideration.

Sincerely,

Ann Rechsteiner

Encl.



NATIONAL CHILD RESEARCH CENTER

3209 Highland Place, N.W. Washington, D.C. 20008
Telephone: 363-8777

Emily A. MacCormack, *Director*

July 6, 1978

Ann Phillips
2032A Fort Davis St., SE
Washington D.C. 20023

Dear Ann,

This is to acknowledge that on December 14, 1977, the Board of Trustees of the National Child Research Center - with the full support of the school's director and staff - did unanimously approve your use of the school's facilities and children's program for your research project concerning "The Effect of Variation in the Amount of Play Materials on the Play Behaviour of the Pre-School Child". In addition, the written consent of each child's parent was obtained prior to the beginning of the research project in the classrooms.

May I add that all of us both anticipated and found great sensitivity, thoughtfulness and care on your part throughout the research project in our school. We look forward very much to learning of the results of all your work.

Sincerely,

A handwritten signature in dark ink, appearing to read "Emily".

Emily A. MacCormack,
Director

UNIVERSITY OF MARYLAND

COLLEGE PARK 20742

COLLEGE OF EDUCATION

July 20, 1978

Ms. Ann Rechsteiner
2032A Fort Davis Street, S.E.
Washington, D.C. 20020

Dear Ann:

Your study has been approved by the Center for
Young Children's Advisory Council.

We're happy to assist you in conducting your
dissertation research study.

Sincerely,

A handwritten signature in cursive script, appearing to read "Kathy".

Kathleen Amershek
Associate Professor/
Acting Director
Center for Young Children

APPENDIX B

OBSERVER'S PACKET

DEFINITIONS

DUSOPAC - Seven categories of play behavior: Disruptive, Unoccupied, Solitary, Onlooker, Parallel, Associative, and Cooperative.

Disruptive category - Refers to any activity in which the child may be engaged that directly or indirectly disrupts another child's play behavior (Barnes, 1972, 5).

Unoccupied behavior - The child apparently is not playing, but occupies himself with watching anything that happens to be of momentary interest. When there is nothing taking place he plays with own body, gets on and off chairs, just stands around, follows the teacher, or sits in one spot, glancing around the room (Parten, 1933, 249).

Solitary (independent) play - The child plays alone and independently with toys that are different from those used by the children within speaking distance, and makes no effort to get close to other children. He pursues his own activity without reference to what others are doing (Parten, 1933, 250).

Onlooker - The child spends most of his time watching the other children play. He often talks to the children whom he is observing, asks questions, or gives suggestions, but does not overtly enter into the play himself. This type differs from the unoccupied in that the onlooker is definitely observing particular groups of children, rather than just that which happens to be exciting at the time. The child stands or sits within speaking distance of the group, so that he can see and hear everything that takes place (Parten, 1933, 249).

Parallel activity - The child plays independently, but the activity he chooses naturally brings him among other children. He plays with toys that are like those which the children around him are using, but he plays with the toy as he sees fit, and does not try to influence or modify the activity of the children near him. He plays beside rather than with the other children. There is no attempt to control the coming or going of children in the group (Parten, 1933, 250).

Associative Play - The child plays with other children. The conversation concerns the common activity; there is a borrowing and lending of play material; they may follow one another with trains or wagons, and there may be mild attempts to control which children may or may not play in the group. All the members engage in similar, if not identical activity; there is no division of labor, and no organization of the activity of several individuals around

any material, goal or product. The children do not subordinate their individual interests to that of the group; instead, each child acts as he wishes. By his conversation with other children one can tell that his interest is primarily in his association, not in his activity. Occasionally, two or three children are engaged in no activity of any duration, but are merely doing whatever happens to draw the attention of any of them (Parten, 1933, 251).

Cooperative (Organized Supplementary) play-- The child plays in a group that is organized for the purpose of making some material product, or of striving to attain some competitive goal, or of dramatizing situations of adult and group life, or of playing formal games. There is a marked sense either of belonging or of not belonging to the group. The control of the group situation is in the hands of one or two of the members of the group, who direct the activity of the others. The goal as well as the method of attaining it necessitates a division of labor, the taking of different roles by the various group members and the organization of activity such that the efforts of one child are supplemented by those of another (Parten, 1933, 251).

Not Applicable to Play Behavior - Behavior other than the DUSOPAC categories.

Verbal Behavior - Within social interaction, any speech directed toward another person or a group, even if the speech is unintelligible (babbling). Verbal behavior can be either an initiation or a response within a social interaction.

- (1) Noises are not to be considered Verbal behavior. Examples of noises are the making of imitative sounds, such as those of trucks, animals, etc.
- (2) Words which refer to noises, such as, "Bang! Bang!", are recorded as verbal behavior.
- (3) Humming and laughing are not recordable behaviors.
- (4) Singing is not recorded as verbal behavior unless the child is an "operatic type", i.e., sings verbalizations rather than speaks them (LeBlanc, et.al., 1969).

Nonverbal Behavior - Within social interaction, any physical behavior (movement toward or away from or direct touch) directed toward another person or a group (adults or peers). Nonverbal behavior can be either an initiation or a response within social interaction.

- (1) Behaviors of children engaged in an exchange of materials which is, in fact, the passing of an object from one child

to another, are recorded as nonverbal social interactions.

- (2) When two or more children are engaged in interdependent behaviors which are required in order to use a toy in its intended manner(e.g., teeter-totter, rocking boat, etc.), these behaviors are recorded as nonverbal social interactions.
- (3) When two or more children are engaged in behaviors of utilizing the same materials, but their behaviors are independent and there is no passing of objects from one to the other, this is not recorded as nonverbal interaction.
- (4) "Accidental" touching is not recorded. Only when it is obvious that touching was directed toward another person, either in initiation or response, is it recorded as nonverbal behavior.
- (5) If the first "accidental" touch results in overt behavior by another and another "accidental" touch occurs, the second touch is considered part of the interaction, usually as a response to the overt behavior emitted by the one who was originally touched "accidentally."
- (6) Smiling is not recorded, either as a nonverbal response or initiation(i.e., smiling is never recorded).
- (7) Eye contact is not recorded(Le Blanc, et. al., 1969).

Practice Situations

Part I. Play Behavior Only

1. S watches two peers building a tower, then watches one peer doing a puzzle and finally stares out the window.
2. S works with other children to form a train. S and her peers put chairs in a line and S calls to her peers to gather hats from the housekeeping corner for the people who will be riding in the train.
3. S is playing with blocks next to peer F, who is reading a book.
4. Peer R was building a bridge. S kicks the bridge.
5. S watches peer A do a puzzle. He talks to A about the puzzle, but does not try to help A do the puzzle.
6. S and peer B are in the housekeeping area. Both are pretending to cook on the stove. They are talking about what they are making.
7. S is reading a book next to peer B, who is also reading a book.
8. S tells the teacher that he hurt his toe.
9. S is standing in the housekeeping corner watching peer A and B set the table.

V
N



10. S is playing with clay. Peer M is sitting next to S and is also playing with clay.

V
N



11. S looks in the mirror. S makes different facial expressions and then laughs. S then looks at the fish.

V
N



12. S is putting a puzzle together at a table. She is sitting next to peer J, who is stringing beads.

V
N



13. S is playing in the housekeeping center with peer M. S says, "You be the Daddy and I'll be the Mommy."

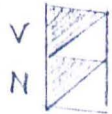
V
N



14. S and Peer X are playing with trucks. They each have a truck, and each is driving one from one pile of blocks to another. S says, "Let's put the blocks in the truck." Peer X answers, "Yes, let's."

Practice Situations

Part II. Interaction Only



1. Peer B is looking at a picture book and S asks peer B if he may look at the book with him. Peer B shakes his head, "Yes."



2. Peer B is sitting on the floor playing with cars. S says to him, "You're dumb; you don't know how to play." Peer B begins to cry.



3. S emits an unintelligible utterance to A and simultaneously puts arm around A.



4. Two peers knock down the house that S is building, and S tries to push them away. He calls to the teacher. The teacher, A, says, "Boys, S is trying to build a house. If you want to knock blocks down make your own house."



5. S and two peers are sitting on a rug looking at books. S says, "Look at this funny man." The peers do not look at S but keep looking at their own books.



6. S and Peer B are sitting next to each other at a table playing with clay. Peer B says to S, "See my clay." S says nothing and does nothing.



7. S is handing puzzle pieces to Peer B, who is placing them in a puzzle form.



8. Two children, S and peer B, are building one block structure. Each is picking up and placing his own blocks on the structure.

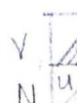
Practice Situations

Part III. Play Behavior and Interaction Combined

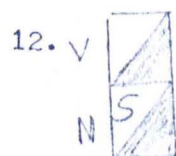
1. An adult says to S, "Come here," and S comes over and asks, "What do you want?"
2. S is sitting on the floor playing with blocks. A says to S, "That's very pretty." S nods his head.
3. S hits peer M and M runs away, crying.
4. S is playing with a car by himself. The teacher, A, says to him, "S, you are playing very nicely." S says to A, "Thank You."
5. Peer D and S are building roads and bridges in the block corner. They are pushing cars, and are making motor noises. S says to peer D, "Let's make a parking lot over here for our cars." Peer D says, "Okay, I will get some more blocks." A says, as they are playing together, "You boys have good ideas this morning." Both boys shake their heads, "Yes."
6. S pushes peer M away from in front of the easel and simultaneously says, "It's my turn to paint!" M pushes her back and simultaneously says, "No, it's my turn!" S walks away and M goes on painting.
7. S is watching another child, peer Z, roll play dough. Peer Z accidentally rolls a piece of play dough off the table and it hits S. S says to peer Z, "Here is your clay." Peer Z says, "Okay."
8. S is handing blocks to peer D who is building a tower with them. S says to peer D, "I bet our tower is the tallest in the world," while continuing to hand blocks to peer D. Peer D says, "Yeah, I bet so, too." S hands her another block.
9. S and two other children are sitting at a table cutting and pasting. S says to peer K, "Give me those scissors." Peer K hands the scissors to S. S says, "Thank you."

Answers to Practice Situations

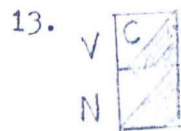
Part I. Play Behavior Only

1. V  S is displaying nonverbal, unoccupied play behavior.
2. V  S is displaying verbal, cooperative play.
3. V  S is displaying nonverbal, solitary play.
4. V  S is displaying nonverbal, disruptive play.
5. V  S is displaying verbal, onlooker play behavior.
6. V  S is displaying verbal, associative play.
7. V  S is displaying nonverbal, parallel play.
8. V  S is making a verbal statement. No play behavior is recorded.
9. V  S is displaying nonverbal, onlooker play behavior.
10. V  S is displaying nonverbal, parallel play.
11. V  S is displaying nonverbal, ^{unoccupied}~~solitary~~ play behavior.

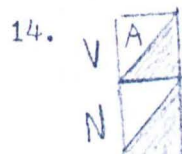
Answers to Practice Situations, continued
Part I(Play Behavior Only), continued



S is displaying nonverbal, solitary play behavior.



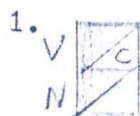
S is displaying verbal, cooperative play behavior.



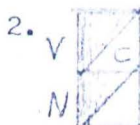
S is displaying verbal, associative play behavior.

Answers to Practice Situations

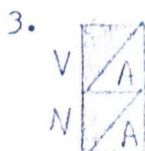
Part II. Interaction Only



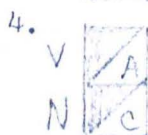
S is interacting verbally with another child.



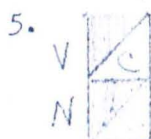
S is interacting verbally with another child.



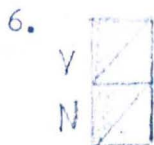
S is interacting verbally and nonverbally with an adult.



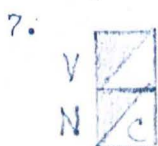
S is interacting verbally and nonverbally with an adult.



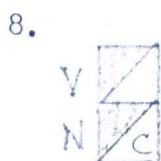
S is initiating a verbal interaction with a child.



S did not respond or interact with the other child, i.e., the other child initiated an interaction but because we are observing S and S did not respond, we enter nothing on the observation form.



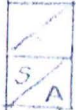
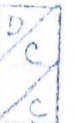
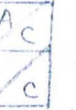
S is interacting nonverbally with another child.



S is interacting nonverbally with another child.

Answers to Practice Situations

Part III. Play Behavior and Interaction Combined

1.  No play behavior is mentioned. S, however, is interacting with an adult.
2.  S is displaying solitary play behavior and is interacting nonverbally with an adult.
3.  S is displaying disruptive play behavior and is interacting nonverbally with another child.
4.  S is displaying solitary play behavior and is interacting verbally with an adult.
5.  S is displaying verbal cooperative play behavior with another child, and nonverbal interaction with the adult.
6.  S is displaying disruptive play behavior and is interacting both verbally and nonverbally with another child.
7.  S is displaying onlooker play behavior and interacts verbally with another child.
8.  S is displaying associative play behavior and is interacting both verbally and nonverbally with another child.
9.  S is displaying parallel play behavior and interacts verbally and nonverbally with another child.

Characteristics and Functions of the Observer

(from "Social Interaction Observation,"
LeBlanc, Etzel, Tyler, 1969,
Department of Human Development,
University of Kansas)

A. Important things for the observer to be aware of and to remember:

1. The observer must be completely objective; only observable behavior is to be recorded.
2. The observer will do all observations from the observation booth.
3. Activities during which observations are to be discontinued are the following:
 - (1) Subject leaves the room or disappears from sight.
 - (2) An adult gives the directive to the entire group to terminate the free play situation, or any directive that causes the free play situation to terminate.
4. If recording is discontinued for any of the reasons cited above, the correct procedure to follow will be:
 - (1) The tape recorder will continue to the next 15-second interval and the next child will be observed; a vertical line will be drawn through that segment (e.g., ). This record should be completed at a later time, preferably the same day.
5. Observers will choose at random one set of five children and each child will be assigned at random a number from 1 to 5. A 15-second observation will be made of Child # 1, followed by a 10-second recording interval, during which the observer will record the behavior observed. This will continue for each of the 5 children in the order assigned. At the completion of this set of observations/recordings a different set of 5 children will be chosen and randomly assigned numbers from 1 to 5. Observations will continue in this fashion until all children have been observed and their behavior recorded. Time permitting, the cycle will be repeated until one(1) hour of observations is completed.

(Note: Each day there should be a different order of children, so as to make the observations as random as possible.
6. When observing, observe only the child decided upon. Only those behavior in which the child is engaged during the time of observation will be recorded. If a behavior has been initiated prior to the observation, only the type of interaction, not the initiator, can be recorded.
7. All observations will be based upon behaviors described in the definitions given during the training session. All behaviors not so listed and defined will not be recorded.

8. For the purposes of this study the frequency of play behavior (how often they occurred), not duration(how long they lasted) will be a factor at this time.
 9. Unusual situations arising during a 15-second observation should be marked with an asterisk(*) and noted on the reverse side of the observation recording form. Also, behavior peculiar to the particular child which causes the recording to appear unusual(e.g., a child who shows a high rate of "talking to himself") should be noted on the reverse side of the observation recording form.
 10. If, after the observation has been recorded, the observer determines that the record is not accurate for any reason(e.g., the observer gets "mixed up"), that complete record should be considered void, and the word VOID should be written across that section of the observation recording form. The observation should be recorded again at a later time, preferably the same day.
 11. If there is doubt as to whether or not a behavior occurred, nothing should be recorded.
 12. A dot(.) is recorded above an interval in which nothing is recorded.  This is a uniform method used to show the time block the observer is recording.
 13. Conflicting recordings cannot appear in verbal and nonverbal blocks of time. If there are conflicting situations, the following priorities are in effect, in the following order:
 - a. Response to initiation already emitted takes precedence in recording over new initiation.
 - b. If subject "S" and another person simultaneously emit behavior, "S"'s behavior is recorded.
 - c. Verbal behavior takes precedence over nonverbal behavior.
- Note: When it appears that two rules could be considered for recording, the above priorities are to be followed. Begin with "a", and if it does not apply go to "b", etc.

APPENDIX C

SCRIPT OF THE TIME-SEQUENCED TAPE

SCRIPT OF THE TIME-SEQUENCED TAPE

This tape is designed to time your observations for you. When I say, "Observe," there will be fifteen seconds during which you will observe. I will then say, "Record," and you will have ten seconds to record what you have observed.

After each set of five observations and five recordings, there will be a thirty second pause to allow you to arrange your next group of five children. The whole cycle of observation, recording and thirty-second pause will then be repeated.

Before beginning each observation cycle, I will count to five so that you can be ready to observe.

The first observation will begin, after the count of five. One, two, three, four, five.

1. Observe

Record

2. Observe

Record

3. Observe

Record

4. Observe

Record

5. Observe

Record

That completes this cycle of observing and recording. There will now be a thirty-second pause to allow you to arrange your next group of five children. [thirty seconds]

At the count of five, the next observation will begin.
One, two, three, four, five, "observe"....

That completes the entire series of observations and recording for this session. This observation session is now complete. You may turn off the tape recorder at this time.

APPENDIX D

PERMISSION LETTER--INSTRUMENT

2032A Fort Davis St. SE
Washington, DC 20020
January 9, 1978

Dr. Keith Barnes
South Okanagan Mental Health Center
390 Queensway
Kelowna, British Columbia

Dear Dr. Barnes:

I am a graduate student at the University of Maryland and I am working on my dissertation on play behavior. In reviewing the literature on play behavior I became familiar with your studies, "Preschool Play Norms: a Replication" (Developmental Psychology, Vol 5(1), 1971), and, "The Public Health Nurse as an Effective Therapist-Behavior Modifier of Preschool Play Behavior" (Community Mental Health Journal, Vol 8(1), 1972).

In these studies you explained your seven categories of play behavior, referred to as DUSOPAC. I would like permission to use the DUSOPAC to obtain data for my study. Also, any information that you may have concerning this observational technique would be greatly appreciated.

My address is as follows:

Ann Rechsteiner
2032A Fort Davis St. SE
Washington, DC 20020

If any cost is involved, please bill me at the above address.
Thank you for your time and consideration.

Sincerely,

Ann Rechsteiner



DEPARTMENT OF HEALTH

Community Health Programs

Mental Health

January 17th, 1978

Ms. N. Rechsteiner
2032A Fort Davis Street S.E.
WASHINGTON, D.C. 20020

Dear Ms. Rechsteiner:

Thank you for your letter of January 9th, 1978 in which you were inquiring about more information concerning the observational techniques used in the Pre-school Play Norm Study. First, I don't really believe that you need any kind of permission to use the DUSOPAC Play Categories to obtain your data. Apart from the Disruptive Play Category all the others were taken from the original Parten, 1932 Study.

I am enclosing the descriptions of each of the play behaviour categories which I used for the Pre-school Play Norm Study. Each observer was given a copy of the typed descriptions, together with the enclosed Observational Play Scale. The play behaviours were coded in ten second time periods and the rule for scoring was that the most dominant play behaviour within that ten second period was the one recorded. Before actually collecting any data, each observer carried out a series of observations on a particular child at exactly the same time as myself and then the rate of agreement was compared afterwards. Inter-rater reliability had to exceed .90 before it was considered that an observer was ready to participate in the study of play behaviour.

I hope the above information is what you require and will be helpful to you in your dissertation on play behaviour.

Yours sincerely

A handwritten signature in blue ink that reads "Keith E. Barnes".

Keith E. Barnes, Ph.D., Psychologist
Director

KEB/dr
Enc.

APPENDIX E
OBSERVATION SHEET

Example of Top of Observation Recording Form(LeBlanc, et. al., 1969)

a. Classroom	b. Observer #	c. Date			d. Session	e. Day of Observation
		Mo	Day	Yr		
					AM PM	

- a. Classroom - Record the code number of the classroom being observed in the first block(will be assigned).
- b. Observer # - The observer number goes in the second block(will be assigned).
- c. Date - The date of observation is recorded next, by month, day, and year.
- d. Session - Indicate in this block whether this observation is in the morning or afternoon by circling the appropriate time designation.
- e. Day of Observation - In the last block write the number indicating the day of observation, according to the following scheme:

- 01 Normal Day
- 02 Normal Day
- 03 Treatment Day
- 04 Normal Day
- 05 Normal Day
- 06 Treatment Day
- 07 Normal Day
- 08 Normal Day

Sample Observation Sheet

Child No.: _____ Time: _____ Activity: _____

	Type of Play behavior	With whom interaction occurred							
V Verbal									
N Nonverbal									

Type of Play Behavior

- D disruptive
- U unoccupied
- S solitary
- O onlooker
- P parallel
- A associative
- C cooperative
- N not applicable to play behavior

With Whom Interaction Occurred*

- A Adult
- C another Child
- S Self

* Circle the letter of the person who is the initiator of the interaction.

OBSERVATION RECORDING FORM

Classroom	Observer	Date			Session		Day of Observation
		Mo	Day	Yr	AM	PM	

Child No.	Sex	Time	Activity
-----------	-----	------	----------

V

N

Child No.

Sex

Time

Activity

V

N

Child No.

Sex

Time

Activity

V

N

Child No.

Sex

Time

Activity

V

N

Child No.

Sex

Time

Activity

V

N

APPENDIX F

TEACHER RATING SHEET

Teacher Information Sheet

Date: _____

Day of Observation: _____

Number of Children: _____

Age Span of Children: _____

Female: _____

Male: _____

Number of Adults in room

Classroom size(area): _____

During Observation: _____

Average number of Years of Previous Group Experience
for the group of children as a whole: _____

Please rate how representative the day has been:

1 2 3 4 5 6 7
Not at all typical Very typical

Additional Comments:

APPENDIX G

MATERIAL LISTS

MATERIAL LISTS
Classroom A and B

Item	Number in Room		Number Removed	
	*T - 1	T - 2	T - 1	T - 2
<u>Blocks</u>				
<u>hollow</u>				
large	10	10	8	8
medium	11	11	8	8
small	8	8	6	6
wedge	3	3	2	2
	2	2	1	1
	7	7	5	5
	3	3	2	2
	3	3	2	2
	12	12	9	9
	3	3	2	2
	4	4	3	3
	7	7	5	5
	6	6	5	5
	2	2	1	1
	7	7	5	5
	2	2	1	1
block accessories	1	1	1	1
<u>Dolls</u>				
dolls	5	5	4	4
stuffed animals	3	3	2	2
<u>Puzzles</u>				
	17	17	13	13
<u>Manipulative Materials</u>				
	16	16	12	12

*T = Treatment

Classroom A and B (continued)

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Wheel Toys</u>	12	12	9	9
<u>Easels</u>	2	2	1	1
<u>Creative Art Materials</u>				
rollers	3	3	2	2
cookie cutters	1	1	1	1
crayons	1 box	1 box	1 box	1 box
clay	1 can	1 can	1 can	1 can
paints	8 jars	8 jars	6 jars	6 jars
markers	1 set	1 set	1 set	1 set
chalk	1 box	1 box	1 box	1 box
stamp pads	4	4	3	3
<u>Books</u>	20	20	15	15
<u>Housekeeping Accessories</u>				
dishes	42	42	32	32
accessories	21	21	16	16
<u>Dress-Up Materials</u>				
doll clothes	11	11	8	8
dress-up clothes	20	20	15	15
shoes	5pairs	5pairs	4pairs	4pairs
purses	4	4	3	3
<u>Other</u>				
water table accessories	27	27	20	20

Classroom C and D

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Blocks</u>				
	5	5	4	4
	7	8	5	6
	16	16	12	12
	24	15	18	11
	15	15	11	11
	12	15	9	11
	24	23	18	17
 flat	16	16	12	12
 flat	27	15	20	11
	27	11	20	8
	19	19	14	14
	8	8	6	6
	16	16	12	12
	18	18	14	14
	10	10	8	8
	19	19	14	14
	6	6	5	5
	6	6	5	5
	10	10	8	8
	2	2	1	1
	4	4	3	3
	9	9	7	7
<u>hollow</u>				
large	12	12	9	9
slats	27	27	20	20
large slats	13	13	10	10
small	6	6	5	5
medium	9	9	7	7
wedge	3	3	2	2

Classroom C and D (continued)

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Blocks (cont.)</u>				
<u>hollow (cont.)</u>				
wedge	3	3	2	2
spools	20	20	15	15
block accessories	6	6	5	5
<u>Dolls</u>	4	5	3	4
<u>Puzzles</u>	6	6	5	5
<u>Manipulative Materials</u>	28	28	21	21
<u>Wheel Toys</u>	14	14	11	11
<u>Easels</u>	2	2	1	1
<u>Creative Art Materials</u>				
crayons	3boxes	3boxes	2boxes	2boxes
chalk	1 box	1 box	1 box	1 box
collage containers	10	10	8	8
pencils	3	3	2	2
magic markers	3	3	2	2
cookie cutters	12	12	9	9
rollers	8	8	6	6
scissors	13	13	10	10
<u>Books</u>	none out, each teacher had own in drawer			

Classroom C and D (continued)

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Housekeeping Accessories</u>				
dishes	41	36	31	27
cups	13	12	10	9
other	21	21	16	16
utensils	20	25	15	19
<u>Dress-Up Materials</u>				
dress-up clothes	27	20	20	15
doll clothes	21	21	16	16
hats	10	10	8	8
purses	8	8	6	6
shoes	8pairs	8pairs	6pairs	6pairs
<u>Other</u>				
scales	2	2	1	1
water table accessories	40	50	30	38

Classroom E

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Blocks</u>				
	36	36	27	29
	4	4	3	3
medium slats	11	11	8	8
	24	30	18	23
big slats	13	13	10	10
	27	27	20	20
	28	28	21	21
	2	2	1	1
	6	6	5	5
	16	16	12	12
	7	7	5	5
	16	16	12	12
	16	16	12	12
small slats	10	10	8	8
	1	1	1	1
	2	2	1	1
1/4 circle	3	3	2	2
	6	6	5	5
	2	2	1	1
<u>Puzzles</u>	31	31	23	23
<u>Manipulative Materials</u>	29	29	22	22
<u>Wheel Toys</u>	17	17	13	13
<u>Easels</u>	2	2	1	1

Classroom E (continued)

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Creative Art Materials</u>				
clay and boards	6	6	5	5
crayon containers	2	2	1	1
scissors	10	10	8	8
<u>Books</u>	33	33	25	25
<u>Housekeeping Accessories</u>				
cups	6	6	5	5
plates	17	17	13	13
pans	8	8	6	6
extra	9	9	7	7
<u>Dress-Up Materials</u>				
hats	10	10	8	8
purses	4	4	3	3
doll clothes	7	7	5	5
blankets	4	4	3	3
<u>Other</u>				
walking board	1	1	1	1

Classroom F

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Blocks</u>				
	45	45	34	34
	37	40	28	30
	21	21	16	16
	43	43	32	32
	3	3	2	2
	8	8	6	6
	6	6	5	5
	9	9	7	7
	16	19	12	14
long slats	24	24	18	18
medium slats	9	9	7	7
	3	3	2	2
	3	3	2	2
	11	11	8	8
	8	8	6	6
	5	5	4	4
	4	4	3	3
	4	4	3	3
	4	4	3	3
	2	1	1	1
	4	4	3	3
	4	4	3	3
	1	1	1	1
	11	11	8	8
<u>hollow</u>				
large	12	12	9	9
small	9	9	7	7
block accessories	31	31	23	23

Classroom F (continued)

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Dolls</u>				
dolls	5	5	4	4
foam people	8	8	6	6
<u>Puzzles</u>	24	24	18	18
<u>Manipulative Materials</u>	34	34	26	26
<u>Wheel Toys</u>	31	31	23	23
<u>Easels</u>	2	2	1	1
<u>Creative Art Materials</u>				
scissors	18	18	14	14
markers	9	9	7	7
clay	1 can	1 can	1 can	1 can
crayons	2boxes	2boxes	1 box	1 box
cookie cutters	20	20	15	15
rollers	6	6	5	5
<u>Housekeeping Accessories</u>				
cups	10	10	8	8
plates	16	16	12	12
extra	30	30	23	23
pans	6	6	5	5
<u>Dress-Up Materials</u>				
hats	10	10	8	8
purses	8	8	6	6
scarves	8	8	6	6
<u>Other</u>				
water table accessories	20	20	15	15

Classroom G and I

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Blocks</u>				
	17	17	13	13
	15	15	11	11
	28	11	21	8
	31	31	23	23
	12	12	9	9
	16	16	12	12
	54	54	41	41
	34	34	26	26
	6	6	5	5
	3	3	2	2
	10	10	8	8
	7	7	5	5
	15	15	11	11
	4	4	3	3
	10	10	8	8
	2	2	1	1
	2	2	1	1
long slats	7	7	5	5
small slats	25	25	19	19
<u>hollow</u>				
planks	6	6	5	5
whole	18	18	14	14
half	13	13	10	10
block accessories	8	8	6	6
<u>Dolls</u>				
	10	10	8	8
<u>Puzzles</u>				
	13	13	10	10
<u>Manipulative Materials</u>				
	34	34	26	26

Classroom G and I (continued)

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Wheel Toys</u>	18	18	14	14
<u>Easels</u>	2	2	1	1
<u>Creative Art Materials</u>				
crayons	25	25	19	19
rollers	9	9	7	7
cookie cutters	10	10	8	8
collage containers	3	3	2	2
scissors	27	27	20	20
glue containers	9	9	7	7
chalk	3boxes	3boxes	2boxes	2boxes
<u>Books</u>	19	19	14	14
<u>Housekeeping Accessories</u>				
pans	5	5	4	4
cups	5	5	4	4
plates	9	9	7	7
other	28	28	21	21
<u>Dress-Up Materials</u>				
hats	7	7	5	5
purses	3	3	2	2
shoes	3pairs	3pairs	2pairs	2pairs
doll clothes	28	28	21	21
dress-up clothes	4	4	3	3
<u>Other</u>				
water table accessories	22	22	17	17
work bench accessories	12	12	9	9

Classroom H

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Blocks</u>				
	5	5	4	4
	21	21	16	16
	22	22	17	17
	9	9	7	7
	2	2	1	1
	4	4	3	3
 wedge	26	26	20	20
	1	1	1	1
	6	6	5	5
	6	6	5	5
	20	20	15	15
	42	42	32	32
	25	25	19	19
	14	14	11	11
	3	3	2	2
	4	4	3	3
red cardboard blocks	26	26	20	20
<u>hollow</u>				
large	14	14	11	11
small	9	9	7	7
block accessories	24	24	18	18
<u>Dolls</u>				
dolls	1	1	1	1
stuffed animals	3	3	2	2
<u>Puzzles</u>				
	13	13	10	10
<u>Manipulative Materials</u>				
	19	19	14	14

Classroom H (continued)

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Wheel Toys</u>	11	11	8	8
<u>Easels</u>	2	2	1	1
<u>Creative Art Materials</u>				
brushes	10	10	8	8
scissors	12	12	9	9
crayons	35	35	26	26
magic markers	40	40	30	30
cookie cutters	9	9	7	7
rollers	3	3	2	2
clay	1 can	1 can	1 can	1 can
<u>Books</u>	48	48	36	36
<u>Housekeeping Accessories</u>				
dishes	4	4	3	3
cups	4	4	3	3
other	7	7	5	5
utensils	12	12	9	9
saucers	4	4	3	3
<u>Dress-Up Materials</u>	1	1	1	1
<u>Other</u>				
work bench accessories	5	5	4	4

Classroom J

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Blocks</u>				
	7	7	5	5
	40	40	30	30
	1	1	1	1
	1	1	1	1
	1	1	1	1
	4	4	3	3
	4	4	3	3
	10	10	8	8
	113	113	85	85
	64	64	48	48
	21	21	16	16
large slats	8	8	6	6
small slats	25	25	19	19
	6	6	5	5
	19	19	14	14
	9	9	7	7
	4	4	3	3
	2	2	1	1
	7	7	5	5
	2	2	1	1
	5	5	4	4
	6	6	5	5
	20	20	15	15
	33	33	25	25
	11	11	8	8
	26	26	20	20
<u>hollow</u>				
slats	6	6	5	5
large	16	16	12	12

Classroom J (continued)

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Blocks (cont.)</u>				
<u>hollow (cont.)</u>				
middlesize	13	13	10	10
block accessories	47	47	35	35
<u>Dolls</u>				
dolls	1	1	1	1
stuffed animals	4	4	3	3
<u>Puzzles</u>	15	15	11	11
<u>Manipulative Materials</u>	12	12	9	9
<u>Wheel Toys</u>	26	26	20	20
<u>Easels</u>	1	1	1	1
<u>Creative Art Materials</u>				
play dough	2 cans	2 cans	1 can	1 can
scissors	31	31	23	23
glue bottles	11	11	8	8
pens	34	34	26	26
crayons	12	12	9	9
color chalk	1 box	1 box	1 box	1 box
color pencils	7	7	5	5
markers	76	76	57	57
brushes	20	20	15	15
<u>Books</u>	15	15	11	11

Classroom J (continued)

Item	Number in Room		Number Removed	
	T - 1	T - 2	T - 1	T - 2
<u>Housekeeping Accessories</u>				
dishes	8	8	6	6
cups	4	4	3	3
utensils	25	25	19	19
other	14	14	11	11
<u>Dress-Up Materials</u>				
hats	6	6	5	5
dress-up clothes	14	14	11	11
purses	2	2	1	1

APPENDIX H

OBSERVER COMMENTS

Appendix H

Observer Comments

Day 1 Normal Day

This was the quietest most solitary playing onlooking group of preschoolers I have ever observed.

Something interesting was taking place at the oven for one half hour. Three children at a time were watching all that time.

Girl just crawled into narrow shelf and stayed there.

Day 3 Treatment Day

Boys played in block corner a great deal. Girls that usually played in doll corner participated in parallel play due to lack of equipment in doll corner--One girl seemed upset and irritable.

Without many blocks children cooperated more in block area.

New to us solitary play items used today. Surprisingly there was better, more sustained cooperative play in block corner than before.

One girl formed a group of three that had sustained verbal cooperative play with trucks and walkie talkies (On the other day girls were almost totally involved in nonverbal solitary or parallel play).

The house corner was almost totally ignored today.

Day 4 Normal Day

Few interactions with boys or girls.

Day 5 Treatment Day

Boy played variations with trucks for most of the time.

Possible more verbal interaction but not see or hear it.

Sustained associative cooperative play predominates.

One child crawled inside a house of blocks--also built a block roadway and a store.

APPENDIX I

TEACHER COMMENTS

Appendix I

Teacher Comments

Day 1 Normal Day

Classroom B

The piano was an additional feature, art activities were absorbing as usual, more truck riding than normal, also more group interaction taking a plane ride--more children were included.

Classroom C

9:45-10:10 we had two dental hygienists to visit.

Classroom F

Spent a lot more time building with the children in the block area than I usually do. I was trying to exemplify good and sometimes necessary teacher behavior in the block area.

Classroom G

This was a good one because people were concentrating on what they were doing. I had a group playing bingo with color which is the first time in our classroom.

Classroom H

They quite often get involved in playing in two distinct groups (blocks and dolls). It was a bit unusual to see them all playing cooperatively in one area (blocks) and at one game (Star Wars). Usually one boy isolates himself with one particular child who was absent today--so today the child got more involved with others and was more patient with them.

Day 2 Normal Day

Classroom A

Difficult day for one child--rest pretty normal.

Classroom B

One child was less involved since his mother was here--seemed to depend on her. Nutrition day brings additional activities into the room--expectation that children

Day 2 Normal Day (cont.)

Classroom B (cont.)

interact with materials is placed upon the child. Some of their usual use of material may be inhibited.

Classroom F

Children chattered together--more than usual I think--a parent was a substitute--two new never before seen manipulative toys were included today.

Classroom G

We had a Valentine party at 10:30 and had to make baskets for Valentine's Day. Kids didn't really have time to play with toys because of sharing day and the party--several children finished valentine boxes while others played in the block and housekeeping areas.

Classroom H

One boy was selfish with the toys and space on the rug--The boy did not play well with others, no one used the doll corner or workbench--small group.

Classroom I

Valentine assembly cut active play time in half.

Day 3 Treatment Day

Classroom A

I like having fewer materials, less stimulation easier clean-up--three children asked about missing items but accepted the answer "another teacher borrowed them." One-sided easel was hardest--one child whined when we said we only had one side set up and he could have a turn right after the present painter.

Classroom B

First day of removal of objects--surprising little reaction--flow of movement was centered around the side of the room where art and the water table was set up. A few straggled to the side near the observation booth. Only three comments regarding removal of toys--all boys--otherwise the day was typical. One incident occurred when two children wanted to ride the same truck.

Day 3 Treatment Day (cont.)

Classroom C

Four children asked where certain pieces of equipment were--one child asked twice, two children completely scanned the room, walked around it, evidently noticing the difference only one commented and that one only asked for a specific piece of equipment. Lack of large transportation toys, tubes in water table and the other half of the egg in the water table caused minor dissatisfaction on the part of the children--Only having one doll concerned two of the three girls present.

Classroom H

Pretty normal as to grouping for adults--no one noticed loss of tools, nobody mentioned lack of Play Dough toys --several noticed missing blocks.

Classroom G

We had part of the group working on Valentine boxes and cooking during part of free play. Sometimes we had to break up action in block area as there were too many who were too wild. Two or three children complained that there were few blocks but seemed to improvise. Used bristle blocks alot--always a favorite. Lack of table games and puzzles went unnoticed. This day was fairly typical I felt with the removal of the material there was much more verbal interaction among the children. I felt the children used almost all the materials in the doll house which doesn't always happen. The "bristle blocks" which stayed are a key item right now in our classroom. They helped in occupying people who normally might choose something else if there are no bristle blocks. No one mentioned that there were things missing to me--but I wasn't in the big play area.

Classroom I

Children appeared tired and "at" each other even as they came to school

Day 4 Normal Day

Classroom A

Things went very smooth nice day, lots of imaginative play with hospital props--Especially calm day for one very active child--Many participated in washing dolls in H₂O.

Day 4 Normal Day (cont.)

Classroom B

Typical day--everything jammed together to make time for visitor--Much less time for children to interact with materials and get into it.

Classroom G

Used many doll corner things--All laid out on table. Typical day where children were involved in all parts of the room--some did table work with numbers matching, matching sounds, puzzles and box paints as art project. One child asked (before looking) "are all the blocks back yet?" They were in their usual pattern of two groups of play. Nobody used play dough and less interest in the workbench.

Classroom I

During quiet time disrupted by four adults--school closed early--confusing

Day 5 Normal Day

Classroom A

Fine day.

Classroom B

Very typical--again free time to choose was lessened by ten minutes so that we can see a movie--no spectacular occurrence--some incidents with sharing toys.

Classroom F

Extreme excitement about Valentine's Day--other teacher hurt was unable to move around the classroom--had to do tasks and was unable to watch active area closely--it was a bit chaotic.

Classroom G

They were wilder because its Valentine's Day--much more loud boisterous play Valentine's Day had all concerned with finishing their cards, putting them in boxes and enjoying special treats--All added to the general excitement--higher than normal noise level.

Day 5 Normal Day (cont.)

Classroom H

Usually there is one other adult, once again they played part-time in one large group. They did not use all the big blocks like they used to do. They only used a small portion--also the first time they used the alphabet cards livelier than usual due to Valentine's Day.

Classroom I

Pretty typical.

Day 6 Treatment Day

Classroom B

Second day of toys removed--again little reaction--Comments from two boys again--block play was fairly intense and sharing of limited number of blocks was a challenge and required some diplomacy--I think less number of blocks was felt by children but they were not very curious where they had gone--my simple answer seemed to satisfy them.

Classroom C

Several children asked for favorite toys which were not present.

Classroom F

Very noisy substitute watched dramatic play--she was in and out--probably had some effect on the mood of the class.

Classroom G

Finishing projects very few noticed missing toys. Blocks were the only thing I heard mentioned--Teachers missed glue and scissors but remaining ones seemed to suffice. Less typical day--two projects going at the same time--Once again there was much more verbal interaction and questioning of where the toys were--there was again the use of more toys in concentrated areas--I was working at the art table with only two bottles of glue. I was surprised how easy the project went and how well they shared the two bottles. In fact it went smoother than when we have all the glues.

Day 6 Treatment Day (cont.)

Classroom H

Three absent made a difference--one boy quite upset over lack of blocks and a hat in housekeeping area--same boy and one girl resented the fact the toys were gone (to another class as I told them). For awhile, they wandered around with nothing to do.

Classroom I

Very quiet--very involved in activity.

Day 7 Normal Day

Classroom B

Overpopulated with adults and several children missing--very quiet--not usual involvement or hubbub of activity.

Classroom G

Lots of manipulative toys used today--block building was a little bit wild near clean up time. Children in various areas well spread out--Creative drama in cubby room--Today was typical as far as activities and flow of our day unfortunately what was not typical was the the other teacher was not here--a mother was filling in--I feel our class is changing in character right now which is affecting the noise level--It's a little bit of being a four-year-old and trying to test a new teacher's situation.

Classroom H

Today they showed their best and worst play. The beginning advent of Star Wars killing led to yelling, crying and fighting until I had to stop all play completely and have a conference in the cubby room with everyone. Following the talk they played beautifully no one in block area however--a girl and a boy worked on a puzzle together--two boys worked with a magnetic card--others were at play with play dough and one worked at the workbench--What a sight and what a quiet sound--gentle talking and sensitivity seemed to penetrate the room.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Acus, Leah Kunkle. Michigan State University, 1973. 3228-A, Dissertation Abstract International, Vol. 34A, part 5-6. "A Study of Categorical Behavior of Preschool Children Exhibited During Spontaneous Play: An Observational Study."
- Almy, Millie. "Spontaneous Play: An Avenue for Intellectual Development," Young Children, 22 (May, 1967), 265-272.
- Altman, Karl. "Effects of Cooperative Response Acquisition on Social Behavior During Free Play," Journal of Experimental Child Psychiatry, 12 (1971), 387-395.
- Baer, Donald, Montrose Wolf, and Todd Risley. "Some Current Dimensions of Applied Behavior Analysis," Journal of Applied Behavior Analysis, 1 (Spring, 1968), 91-97.
- Barker, Roger. "Exploration in Ecological Psychology," American Psychologist, 20 (1965), 1-14.
- _____, and Herbert Wright. "Psychological Ecology and the Problem of Psychosocial Development," Child Development, 20 (Sept., 1949), 133-141.
- Barnes, Keith. "Preschool Play Norms," Developmental Psychology, 5 (1971), 99-103.
- _____, Margaret Wootton, and Sheri Wood. "The Public Health Nurse as an Effective Therapist-Behavior Modifier of Pre-school Play Behavior," Community Mental Health Journal, 8 (1972), 3-7.
- Bates, John and P.M. Bentler. "Play Activities of Normal and Effeminate Boys," Developmental Psychology, 9 (1973), 20-27.
- Benjamin, Harold. "Age and Sex Differences in the Toy Preference of Young Children," Journal of Genetic Psychology, 40 (1932), 417-428.
- Bettelheim, Bruno. "Play and Education," School Review, 81 (1972-73), 1-13.
- Birnie, Laraine, and John Whiteley. "The Effects of Acquired Meaning on Children's Play Behavior," Child Development, 44 (1973), 355-358.
- Boynton, Paul, and F.A. Ford. "The Relationship Between Play and Intelligence," Journal of Applied Psychology, 17 (1933), 294-301.

- Brandt, Richard. Studying Behavior in Natural Settings. New York: Holt, Rinehart, and Winston, 1972.
- Bridges, K., and M. Banham. "Occupational Interest of Three-Year-Old Children," Pedagogical Seminary, 34 (1927), 415-423.
- _____. "Occupational Interests and Attention of Four-Year-Old Children," Pedagogical Seminary and Journal of Genetic Psychology, 36 (1929), 551-569.
- Britt, Stewart, and Sidney Q. Janus. "Toward a Social Psychology of Human Play," Journal of Social Psychology, 13 (1941), 351-384.
- Bruner, Jerome, Alison Jolly and Kathy Sylva, eds. Play--Its Role in Development and Evolution. New York: Basic Books, 1976.
- Buell, Joan, Patricia Stoddard, Florence Harris, and Donald Baer. "Collateral Social Development Accompanying Reinforcement of Outdoor Play in a Preschool Child," Journal of Applied Behavior Analysis, 1 (1968), 167-173.
- Caplan, Frank and Theresa. The Power of Play. Garden City, New York: Anchor Books, 1974.
- Cartwright, Sally. "Blocks and Learning," Young Children, 29 (Nov. 73-Sept. 74), 141-146.
- Cook, William. "Picking Playground Equipment," American School and University, 44 (1971), 38.
- Dansky, Jeffrey, and Irwin Silverman. "Effects of Play on Associative Fluency in Preschool-aged Children," Developmental Psychology, 9 (1973), 38-43.
- _____. "Play, A General Facilitation of Associative Fluency," Developmental Psychology, 11 (1975), 104.
- Davis, David. "Play--A State of Childhood," Childhood Education, 42 (December, 1965), 242-244.
- Dayton, D. Mitchell. The Design of Educational Experiments. New York: McGraw Hill, 1970.
- Dow, Mildred. "Playground Behavior Differentiating Artistic from Non-Artistic Children," Psychological Monograph 45, (200-204), 82-93.
- Eckerman, Carol, Judith Whatley, and Stuart Kutz. "Growth of Social Play with Peers During the Second Year of Life," Developmental Psychology, 11 (1975), 42-49.

- Erikson, Erik. Toys and Reasons--Stages in the Ritualization of Experience. New York: W.W. Norton and Co., 1977.
- Eron, Leonard, Jerome Laulicht, Leopold Walder, I.E. Farber, and John Spiegel. "Application of Role and Learning Theories in the Study of the Development of Aggression in Children," Psychological Reports, 9 (1961), 291-334.
- Fagot, Beverly. "Variation in Density Effect on Task and Social Behaviors of Preschool Children," Developmental Psychology, 13 (1977), 166-167.
- _____, and Isabelle Littman. "Stability of Sex Role and Play Interest from Preschool to Elementary School," The Journal of Psychology, 89 (1975), 285-292.
- _____, and Gerald Patterson. "An In Vivo Analysis of Reinforcing Contingencies for Sex Role Behaviors in the Preschool Child," Developmental Psychology, 1 (1969), 563-568.
- Feitelson, Dina, and Gail Ross. "The Neglected Factor--Play," Human Development, 16 (1973), 202-223.
- Fenson, Larry, Richard Kearsley, Jerome Kagan and Philip Zelazo. "The Developmental Progression of Manipulative Play in the First Two Years," Child Development, 47 (1976), 232-236.
- _____, Victor Sapper, and Dan Minner. "Attention and Manipulative Play in a One-Year-Old Child," Child Development, 45 (1974), 757-764.
- Finley, Gordon, and Ottis Layne. "Play Behavior in Young Children--A Cross Cultural Study," Journal of Genetic Psychology, 119 (1971), 203-210.
- Fling, Sheila, and Martin Manosertitz. "Sex Typing in Nursery School Children's Play Interests," Developmental Psychology, 7 (1972), 146-152.
- Frank, Lawrence. "Play is Valid," Childhood Education, 44 (Sept. 1967 - May, 1968), 433-440.
- Garrett, Henry. Statistics in Psychology and Education. New York: Longmans, Green and Co., 1951.
- Garvey, Catherine. Play. Cambridge: Harvard University Press, 1977.
- _____. "Some Properties of Social Play," Merrill Palmer Quarterly, 20 (1974), 163-180.
- _____, and Robert Hogan. "Social Speech and Social Interaction-Egocentrism Revisited," Child Development, 44 (1973), 562-568.

- Gewirtz, Jacob. "A Factor of Some Attention-Seeking Behaviors of Young Children," Child Development, 27 (1956), 17-37.
- Gilmore, J. Barnard. "The Role of Anxiety and Cognitive Factors In Children's Play Behavior," Child Development, 37 (1966), 397-416.
- Glass, Gene and Jullan Stanley. Statistical Methods in Educational Psychology. Englewood Cliffs, N.J.: Prentice Hall, 1970.
- Golubchik, Leonard and Barry Persky, eds. Early Childhood Education. Wayne, N.J.: Avery Publishing Group, Inc., 1977.
- Gottfried, Nathan, and Bill Seay. "An Observational Technique for Preschool Children," Journal of Genetic Psychology, 122 (1973), 263-268.
- _____. "Early Social Behavior: Age and Sex Baseline Data from a Hidden Population," Journal of Genetic Psychology, 125 (1974), 61-69.
- Gramza, Anthony, and Gert Scholtz. "Children's Responses to Visual Complexity in a Play Setting," Psychological Reports, 35 (1974), 895-899.
- Green, Elise. "Friendships and Quarrels Among Preschool Children," Child Development, 4 (1933), 237-252.
- Gronlund, Norman. Measurement and Evaluation in Teaching. New York: Macmillan, 1971.
- Halverson, Charles, and Mary Waldrop. "Relations Between Preschool Barrier Behaviors and Early School Age Measures of Coping, Imagination and Verbal Development," Developmental Psychology, 10 (1974), 716-720.
- _____. "The Relations of Mechanically Recorded Activity Level to Varieties of Preschool Play Behavior," Child Development, 44 (1973), 678-681.
- Hapkiewicz, Walter and Robert Stone. "The Effect of Realistic versus Imaginary Aggressive Models on Children's Interpersonal Play," Child Study Journal, 4 (1974), 47-58.
- Harper, Lawrence, and Karen Sanders. "Preschool Children's Use of Space--Sex Differences in Outdoor Play," Developmental Psychology, 11 (1975), 119.
- Harris, Florence, Montrose Wolf, and Donald Baer. "Effect of Adult Social Reinforcement on Child Behavior," Young Children, 20 (1965), 8-17.

- Hartley, Ruth. "Play--The Essential Ingredient," Childhood Education, 48 (November, 1971), 80-83.
- _____. "Selective Lists for Giving," Childhood Education, 45 (November, 1968), 122-127.
- _____, and Robert Goldenson. The Complete Book of Children's Play. New York: Crowell, 1963.
- Heathers, Glen. "Emotional Dependence and Independence in Nursery School Play," Journal of Genetic Psychology, 87 (1955), 37-57.
- Hurlock, Elizabeth. "Experimental Investigations of Childhood Play," Psychological Bulletin, 31 (1934), 47-66.
- Isaac, Stephen and William Michael. Handbook in Research and Evaluation. San Diego, Calif.: EdITS Publishers, 1977.
- Iwanaga, Margaret. "The Development of Interpersonal Play Structure in 3-4-5-Year-Old Children," Journal of Research and Development in Education, 6 (1972), 71-81.
- Johnson, Marguerite. "The Effect of Behavior of Variation in the Amount of Play Equipment," Child Development, 6 (1935), 56-68.
- Johnson, M. Clemens. A Review of Research Methods in Education. Chicago: Rand McNally, 1977.
- Johnston, Ann, Donna De Luca, Kate Murtargh, and Edward Diener. "Validation of Laboratory Play Measure of Children's Aggression," Child Development, 48 (1977), 324-327.
- Kerlinger, Fred. Foundations of Behavioral Research. New York: Holt, Rinehart and Winston, 1964.
- Kirk, Roger. Introductory Statistics. Monterey, Calif.: Brooks/Cole Publishing Co., 1978.
- Klinger, Eric. "Development of Imaginative Behavior Implications of Play for a Theory of Fantasy," Psychological Bulletin, 72 (1969), 277-295.
- Kniveton, Bromley, and Celia Pike. "Social Class, Intelligence and Development of Children's Play Interest," Child Psychology and Psychiatry, 13 (1972), 167-181.
- Koch, Helen. "A Factor Analysis of Some Measure of the Behavior of Preschool Children," Journal of General Psychology, 27 (1942), 257-287.

- _____. "A Multiple Factor Analysis of Certain Measures of Activeness in Nursery School Children," Journal of Genetic Psychology, 45 (1934), 482-487.
- Langlois, Judith, Nathan Gottfried, and Bill Seay. "The Influence of Sex of Peer on the Social Behavior of Preschool Children," Developmental Psychology, 8 (1973), 93-98.
- LeBlanc, J.M., Etzel, B.C., and Tyler, R.M. Verbal and non-verbal social interactions of low and middle-income children in preschool settings. Paper presented at Society for Research in Child Development, Santa Monica, California, March 28, 1969.
- Leeper, Sarah, Ruth Dales, Dora Skipper and Ralph Witherspoon. Good Schools for Young Children. New York: Macmillan, 1974.
- Lehman, Harvey, and Paul Witty. "A Study of Play in Relation to Intelligence," Journal of Applied Psychology, 12 (1928), 369-397.
- _____. "Periodicity and Play Behavior," Journal of Educational Psychology, 18 (1927), 115-118.
- _____. "Play Interests as Evidences of Sex Differences in Aesthetic Appreciation," American Journal of Psychology, 40 (1928), 449-457.
- Leyden, Martha. Columbia University, 1971. 3562-A, Dissertation Abstract International, Vol. 32A, part 7-8. "An Analysis of the Advice Given to Parents About Preschoolers' Play from 1930 to 1970, Through Popular Magazine."
- Lieberman, J. Nina. Playfulness, Its Relationship to Imagination and Creativity. New York: Academic Press, 1977.
- Loo, Chalsa. Ohio State University, 1971. 4189-B, Dissertation Abstract International, Vol. 32B, part 7-8. "The Effects of Spatial Density on the Social Behavior of Children."
- Lowe, Marianne. "Trends in the Development of Representational Play in Infants from One- to Three-Years--An Observational Study," Journal of Child Psychology and Psychiatry and Related Disciplines, 16 (1973), 33-47.
- Martinello, Marian. "Playgrounds for Learning," Elementary School Journal, 74 (November, 1973), 106-114.
- Maurer, Katharine. "Patterns of Behavior of Young Children as Revealed by a Factor Analysis of Trait Clusters," Journal of Genetic Psychology, 59 (1941), 177-188.

- McLellan, Joyce. The Question of Play. New York: Pergamon Press, 1970.
- Mengert, Ida. "A Preliminary Study of the Reaction of Two-Year-Old Children to Each Other When Paired in a Semi-Controlled Situation," Journal of Genetic Psychology, 39 (1931), 393-398.
- Millar, Susanna. The Psychology of Play. Baltimore: Penguin Books, 1968.
- Moore, Nancy, Carolyn Evertson and Jere Brophy. "Solitary Play: Some Functional Reconsiderations," Developmental Psychology, 10 (1974), 830-834.
- Mueller, Edward. "The Maintenance of Verbal Exchanges Between Young Children," Child Development, 43 (1972), 931-938.
- _____, Mark Bleur, Joanne Krakow, Katherine Hegedus, and Paulette Cournoyer. "The Development of Peer Verbal Interaction Among Two-Year-Old Boys," Child Development, 48 (1977), 284-287.
- Munsinger, Harry, and Morton Weir. "Infant's and Young Children's Preference for Complexity," Journal of Experimental Child Psychology, 5 (1967), 69-73.
- Murphy, Michael, and Richard Goldner. "Effects of Teaching Orientation on Social Interaction in Nursery Schools," Journal of Educational Psychology, 68 (1976), 725-728.
- Mussen, Paul, ed. Handbook of Research Methods in Child Development. New York: John Wiley, 1960.
- O'Connor, Margaret. "The Nursery School Environment," Developmental Psychology, 11 (1975), 556-561.
- Olson, Williard, and Elizabeth Cunningham. "Time Sampling Techniques," Child Development, 5 (1934), 41-58.
- Parten, Mildred. "Social Participation Among Pre-School Children," Journal of Abnormal and Social Psychology, 27 (April 1932-March 1937), 243-269.
- _____. "Social Play Among Pre-School Children," Journal of Abnormal and Social Psychology, 28 (April 1933-March 1934), 136-137.
- Patterson, G.R. and D. Anderson. "Peers as Social Reinforcers," Child Development, 35 (1964), 951-960.
- Piaget, Jean. Play Dreams and Imitation in Childhood. New York: W.W. Norton and Co., 1962.

- Piers, Maria, ed. Play and Development. New York: W. W. Norton and Co., 1972.
- Pulaski, Mary Ann Spencer. "Play as a Function of Toy Structure and Fantasy Predisposition," Child Development, 41 (May-June, 1970), 531-537.
- Quilitch, H. Robert and Todd Risley. "The Effects of Play Materials on Social Play," Journal of Applied Behavior Analysis, 6 (1973), 573-578.
- Rabinowitz, F. Michael, and Sandra De Myer. "Stimulus and Response Alternation in Young Children," Developmental Psychology, 4 (1971), 43-54.
- _____, Barbara Moetz, and Nancy Finkel. "The Effects of Toy Novelty and Social Interaction on the Exploratory Behavior of Preschool Children," Child Development, 46 (1975), 286-289.
- Reuter, Jeanette, and Gladys Yunik. "Social Interaction in Nursery Schools," Developmental Psychology, 9 (1973), 319-325.
- Rheingold, Harriet, Dale Hay, and Meredith West. "Sharing in the Second Year of Life," Child Development, 47 (1976), 1148-1158.
- Rosen, Catherine. "The Effects of Sociodramatic Play on Problem-Solving Behavior Among Culturally Disadvantaged Preschool Children," Child Development, 45 (1974), 920-927.
- Rubin, Kenneth. "Play Behavior of Young Children," Young Children, (September, 1977), 16-24.
- _____. "Relation Between Social Participation and Role-Taking Skills in Preschool Children," Psychological Reports, 39 (1976), 823-826.
- _____. "The Social and Cognitive Value of Preschool Toys and Activities," Canadian Journal of Behavioral Sciences, (1977), 2-7.
- _____, and Terrence Maioni. "Play Preference and Its Relationship to Egocentrism, Popularity and Classification Skill in Preschool," Merrill Palmer Quarterly, 21 (1975), 171-179.
- _____, and Margaret Hornung. "Free Play Behavior in Middle and Lower Class Preschoolers--Parten and Piaget Revisited," Child Development, 47 (1976), 414-419.
- Rule, Brendan Gail and Andrew Nesdale. "Differing Functions of Aggression," Journal of Personality, 42 (1974), 467-481.

- Sanders, Karen, and Lawrence Harper. "Free Play Fantasy Behavior in Preschool Children--Relation Among Gender, Age, Season, and Location," Child Development, 47 (1976), 1182-1185.
- Scarfe, N.V. "Play is Education," Childhood Education, 39 (November, 1962), 117-121.
- Schlosberg, Harold. "The Concept of Play," Psychological Review, 54 (1947), 229-231.
- Scholtz, Gert, and Michael Ellis. "Repeated Exposure to Objects and Peers in a Play Setting." Journal of Experimental Child Psychiatry, 19 (1975), 448-455.
- Seagoe, May. "A Comparison of Children's Play in Six Modern Cultures," Journal of School Psychology, 9 (1971), 61-72.
- _____. "Children's Play in Three American Subcultures," Journal of School Psychology, 9 (1971), 167-172.
- Selltiz, Claire, Marie Johoda, Morton Deutsch and Stuart Cook. Research Methods in Social Relations. New York: Holt, Rinehart, and Winston, 1965.
- Shallit, Rebecca. "The Dramatic Play of Ten Nursery School Children," Child Development, 111 (March-December, 1932), 356-363.
- Shores, Richard and Peggy Hester and Phillip Strain. "The Effects of Amount and Type of Teacher-Child Interaction on Child-Child Interaction During Free-Play," Psychology in the Schools, Vol. 18, Number 2 (1976), 171-175.
- Shure, Myrna. "Psychological Ecology of a Nursery School," Child Development, 34 (1963), 979-992.
- Siegel, Alberta, and Lynette Kohn. "Permissiveness, Permission and Aggression--The Effect of Adult's Presence or Absence on Aggression in Child's Play," Child Development, 30 (1959), 131-141.
- Singer, David, and Judith Rummo. "Ideational Creativity and Behavioral Style in Kindergarten Age Children," Developmental Psychology, 8 (1973), 154-161.
- Slobin, Dar. "The Fruits of the First Season--A Discussion of the Role of Play in Childhood," Journal of Humanistic Psychology, 4-5 (1964-1965), 59-76.
- Smith, Peter. "Social and Play Behavior of Preschool Children," Man-Environment Systems, 2 (March, 1972), 90-91.

- Stith, Marjorie, and Ruth Connor. "Dependency and Helpfulness in Young Children," Child Development, 33 (1962), 15-20.
- Sutton-Smith, Brian. "The Role of Play in Cognitive Development," Young Children, 22 (September, 1967), 361-370.
- Switzky, Harvey, Carol Haywood, and Robert Isett. "Exploration, Curiosity and Play in Young Children: Effect of Stimulus Complexity," Developmental Psychology, 10 (1974), 321-329.
- Updegraff, Ruth and Edithe Herbst. "An Experimental Study of the Social Behavior Stimulated in Young Children by Certain Play Materials," Pedagogical Seminary and Journal of Genetic Psychology, 42-43 (1933), 372-391.
- Van Dalen, Deobold and William Meyer. Understanding Educational Research--An Introduction. New York: McGraw Hill Co., 1962.
- Wahler, Robert. "Child-Child Interaction in Free Field Settings --Some Experimental Analyses," Journal of Experimental Child Psychology, 5 (1967), 278-293.
- Waldrop, Mary, and Charles Halverson. "Intensive and Extensive Peer Behavior Longitudinal and Cross Sectional Analysis," Child Development, 46 (1975), 19-26.
- Ward, William. "Creativity and Environment Cues in Nursery School Children," Developmental Psychology, 1 (1969), 543-547.
- Waugh, Albert. Elements of Statistical Method. New York: McGraw Hill Co., 1952.
- Weisler, Ann, and Robert McCall. "Exploration and Play: Resume and Redirection," American Psychologist, 31 (1976), 492-508.
- Whitley, M.T. "Children's Interest in Collecting," Journal of Educational Psychology, 20 (1929), 249-261.
- Winer, B.J. Statistical Principles In Experimental Design. New York: McGraw Hill. 1971.
- Wolf, Thomas. "Influences of Age and Sex on Model on Sex-Inappropriate Play," Psychological Reports, 36 (1975), 99-105.
- _____. "Effects of a Live Adult Modeled Sex-Inappropriate Play Behavior in a Naturalistic Setting," Journal of Genetic Psychology, 128 (1976), 27-32.